


Bat-215

EPB Ser

MED/3

Copy 1



Digitized by the Internet Archive
in 2019 with funding from
Wellcome Library

<https://archive.org/details/s3id13406920>

THE
M E D I C A L
AND
C H I R U R G I C A L
R E V I E W ;
CONTAINING
A COPIOUS ACCOUNT
OF THE
V A R I O U S P U B L I C A T I O N S
IN DIFFERENT LANGUAGES
O N
M E D I C I N E A N D S U R G E R Y .

VOL. IV.

From MAY 1797, to MAY 1798.

— — — — — quæ non fecimus ipsi
vix ea nostra voco — — — — — OVID.

LONDON:

Printed for the EDITORS; and sold by T. BOOSEY, Broad-street;
MUDIE, Edinburgh; and W. GILBERT, Dublin.

THE
HISTORICAL
REVIEW
OF THE
ARTS AND
MANUFACTURES
IN THE
MEDICINE AND SURGERY



By
J. L. DOUGLAS
London: The Librarian and Editor, J. L. DOUGLAS, Esq.
18, Bedford Square, W.C. 1

CONTENTS

OF THE

FOURTH VOLUME.

Art.	Page
1 TROTTER's Medicina Nautica	1
2 Duncan's Annals of Medicine, vol. 1	24
3 Rowley's Schola Nova Medicinæ	51
4 Parker on Fever	58
5 Abernethy's Surgical and Physiological Essays, part 3	67
6 Vofs's Medicinische Beobachtungen, &c.	85
7 Turnbull on Lues Venerea	87
8 Earl's Appendix to a Treatise on the Stone	88
9 Hooper's Translation of Plenck's Hygrology	91
10 Rush's Medical Enquiries and Observations, vol. 4	92
11 Duncan's Annals, vol. 1, continued,	101
12 Rowley's Schola Nova, Medicina, continued,	117
13 Jones's Medical, Philosophical, and Vulgar Errors Refuted	130
14 Rush's Medical Inquiries, continued,	144
15 De Saint Bel's Elements of the Veterinary Art	166
16 Hooper's Observations on the Structure and Economy of Plants	167
17 Rollo's Account of the Diabetes Mellitus	178
18 Gregory's Economy of Nature	192
19 Tissot's Life of Zimmerman	194
20 Blizard's Suggestions for the Improvement of Hospitals	199
21 Rowley's Schola Nova, continued,	201
22 Rollo on Diabetes, continued,	207
23 Philosophical Transactions of the Royal Society of London, part 1, 1797	227
24 Medical Facts and Observations, vol. 7	250
25 Hufeland's Art of prolonging Human Life	274
26 Soemmering, de Corporis Humani Fabrica	276
27 Clark on the Yellow Fever of Dominica, &c.	279
28 A Short Address to the Professors of Surgery	295
29 Medical Extracts, vol. 4	292
30 Hamilton's Collection of Engravings for the Study of Mid- wifery	293
31 Kuhn's Bibliotheca Medica	294
33 Medical Facts, vol. 7, continued,	301

Art.		Page
34	Philosophical Transactions, Part 1, 1797, continued	321
37	Bourne's introductory Lecture to Chemistry	337
38	Home's Treatise on Ulcers of the Legs	341
39	Monro on the Brain, Eye, and Ear,	354
40	Bell's Anatomy of the Human Body, vols. 1, 2	366
41	Beddoes's Reports on Nitrous Acid	384
42	Andersch's Treatise on the Nerves	395
43	Bacheracht's Hygeienical Dissertation	396
44	Tytler's Translation of St. Marthe's Pædotrophia	398
45	Fothergill on the Abuse of Spirituous Liquors	399
46	Kelson's Remarks on Colds	400
47	Currie's Reports on Cold and Warm Water	401
48	Trinder's Essay on the external use of Oils	416
49	Practical Synopsis of the Materia Medica and Materia Ali- mentaria	419
50	Vrolick on the Fall of the Leaves of Plants	425
51	Kentish's Essay on Burns	432
52	Carrick on the Properties of the Bristol Water	445
53	Letter on the Claims of the Faculty	453
54	Bradin on the Poisonous Property of the Yew Tree	453
55	Robilliard on Malconformation of the Urinary Passages	455
56	Portal on the Nature and Treatment of Rickets	456
57	Experiments on Injection of Veins	458
58	Account of the Effects of Belladonna on the Eyes	459
59	M'Lean's Enquiry into the Fever of St. Domingo	460
60	Philosophical Transactions of the Royal Society, part 2, 1797	483
61	Sabatier's Treatise on Operative Medicine	495
63	Garnett's Outlines of a Course of Chemistry	497
63	Currie's Reports on Cold and Warm Water	501
64	Philosophical Transactions, part 1, 1797, continued	516
65	Bree on Disordered Respiration	539
66	Wedekind De Morborum Primarum Viarum Notitia	549
67	Siebold Historia Systematis Salivalis	557
68	Underwood on the Disorders of Childhood	562
69	Hooper's Anatomist's Vade Mecum	563
70	Gilbert sur la Medecine Morale	564
71	Mascagni on the external Application of Opium, &c. dissolved in the Gastric Juice	566
72	Blair's Soldier's Friend	567
73	Saumarez's New System of Physiology	568
74	Saunders's Oratio Harverana	582
75	Bourne's ditto	582

P R E F A C E.

FOUR years having elapsed since the first publication of the MEDICAL AND CHIRURGICAL REVIEW, it would surely be superfluous to enter into a particular detail of its nature and objects. These will best appear from a perusal of the work itself. To those, however, who have expressed a wish, that it assumed a more critical form, than it has hitherto done; we can only urge our former arguments, sanctioned, indeed, as they have been, by time and experience. The variety and extent of Medical publications preclude even the possibility of entering minutely into the merits of each individual work, within the narrow limits necessarily assigned to us: and we should think that space ill employed, that excluded analysis for the purpose of critical discussion, which in general is little more than a balance of opinions.

It

It was the wish of the editors, in the task they undertook, to exhibit a compendium of the progressive state of Medicine ; such an one, as might satisfy the general inquirer, and those who are too actively employed, to admit of extensive reading. To others, whose leisure and opportunities afford means of indulging a more extended inquiry, it might serve as a text book or index, to direct, in some sort, their pursuit.

Of the present volume, the variety and importance of the articles will be found, we trust, in no respect inferior to those of the preceding ones. The works which have already appeared, and others that have been announced, promise in future a harvest equally abundant and interesting.

The Editors cannot conclude without expressing their acknowledgements to correspondents for the communication of many valuable articles ; a favour they earnestly beg a continuance of.

THE
MEDICAL and CHIRURGICAL
REVIEW.

JULY, 1797.

ARTICLE I. *Medicina Nautica. An Essay on the Diseases of Seamen; comprehending the History of Health in his Majesty's Fleet under the command of Richard Earl Howe, Admiral. By THOMAS TROTTER, M. D. Physician to the Fleet. Octavo, 487 pages, price 8s. CADELL AND DAVIS, LONDON, 1797.*

THE present volume contains the History of Health in the Channel Fleet during a period of three years. The operations of a large Fleet undoubtedly offer a field for observation, of the first importance to the Medical Inquirer. That Dr. Trotter has cultivated this with much honour to himself, and benefit to the public, will appear, we trust, from the account of his labours, which we are now to lay before our readers.

Two Discourses are premised: the First relates to some recent changes made in the medical department of the Navy, and to what the author judges may still be deemed objects of reformation. In the Second, he has mentioned such desirable alterations as are connected with the preservation of Health, and the service at large. These, though in themselves

selves highly interesting, are less connected with medicine than with internal regulation, and hardly admit of abridgment.

Following these is a General Abstract of the state of Health in the Fleet, from the 1st of January, 1794, to December, 1796, and of the weather during that period. The author's remarks on the diseases which prevailed, are rendered more valuable by the communications from the surgeons of the different ships. Great attention was paid to the destruction of contagion, and with the best consequences. With respect to scurvy, our stock of facts is very much enlarged; and its prevention and cure, the author observes, have, from recent experiment, been brought to a certainty, so as to supersede the utility of further investigation.

This brings us to the strictly medical part of the volume, and the subject first discussed is that of contagion.

Substances imbued with the exhalations from infected bodies, if not exposed to the air, are said to have their powers of communicating disease increased; or in other words, the infection from *fomites* becomes more virulent than it was when first separated from the body.

The author is of opinion with others, that the exhalations or excretions of the sick, are the vehicles of contagion. 'It is these which impregnate the atmosphere with noxious matter: they affect in like manner bed-cloaths or apparel, and every thing that can imbibe them, when in contact with the diseased body. When bed-cloaths, or body-linen, but particularly silk or woollen cloath*, have been exposed to these exhalations, and then heaped together for a length of time, the noxious effluvia are, as it were, multiplied, and will more certainly infect others, than they did at first. The bales of goods which brought the

* Being animal matter, and more easily liable to decomposition.

plague to Marfeilles, and affected the people that opened them fo suddenly, had their virulence increafed by not being duly ventilated. When the jail-fever contagion was brought into court by the prifoners at the Oxford affizes, and more lately at the Old Bailey, the fever was propagated from the cloathing of the prifoners: no doubt, from being confined in impure, ill-aired cells, this infection became more virulent. The highly concentrated ftate of the contagion in the bales of goods, could only have been brought to that ftate of virulence, from the clofenefs of the package; it cannot be fupposed that any human beings could have put them together otherwife. The nurfes of hofpitals know well, as Dr. Lind tells us, that there is moft danger of catching a fever, when they pile heaps of bed-cloaths or body-linen together, for a few days, before it is carried to the wafh-houfe. The wafherwomen at Haflar have alfo told me the fame thing. They know when a dangerous fever is in the hofpital, from the bad fmell of the cloaths; this makes them air them abroad, till the fmell is gone, and then they can wafh them with fafety. But if it happened, from the hurry, that this could not be done, or if it was neglected by design, many of them have been feized with the ficknefs. The porters and people employed in cleaning and fumigating the blankets and beds at Haflar, are well acquainted with this fact, and they meafure the danger by the badnefs of the fmell. This ought to inftruct every body to ftand to windward of thefe infected fubftances, when they are opened; as the current of air would then carry it the other way. In one of the courts of juftice, the people who ftood between the prifoners and a window into which the wind blew, efaped the infection, while thofe on the other fide were fufferers.

‘ In the fummer of 1793, while the Oreftes brig, commanded by Lord Auguftus Fitzroy, lay at Plymouth, ſhe was anchored very near and to leeward of

an army transport, which had on board a very malignant fever among the soldiers. While the soldiers were moved on deck, to go on shore to the hospital, the crew of the *Orestes*, from curiosity, walked on deck to look at them. Such was the concentrated state of the contagion, among the cloathing and bedding of these troops, on coming from below, that eighteen people belonging to the brig, were quickly seized with the same fever; the infection of which had been conveyed by the current of wind. It did not, however, extend much farther in the *Orestes*, from the attention of her Commander. But this ought to be a caution for ships to keep clear of those that have fevers on board, as a virulent contagion may be conveyed for a considerable distance.'

It was the practice in the *Charon Hospital Ship*, to plunge every thing as it came from the bed of the sick into hot water; and although there were many malignant cases of typhus, and some deaths, no infection ever spread there.

The fact of infectious matter becoming more virulent when confined, is thus attempted to be explained:

' This fact being well known, did not fail to excite the attention of physicians to solve the mystery. The most plausible reason that could be assigned, was the generation of animalcula; the cotton or woollen cloathing was said to serve as a nest for the corpuscles to multiply; and thus the contagion was thought to increase sevenfold. We shall afterwards see that this notion entirely regulated the different methods that have been used to destroy contagion, and check the fevers which were spread by it. This mode of accounting for the fact, was certainly a bold effort of the imagination; but I do not think it can be called any thing else; for these little animals have never been seen even with a microscope; and I cannot help concluding, that like some other animals which we have heard of, they are fabulous. The substances we
are

are now speaking of, being more or less tainted by the excretions of the sick, it will facilitate our inquiry to know the nature of these excretions. Now the fœtor of the breath, perspirable matter, &c. evidently demonstrate that they differ from the healthy state. The smell, to our senses, comes very near to what is called *sulphurated hydrogenous gas*. Some of the fluids within the body would seem to be, in some degree, in a state of actual decomposition; unless we can suppose the mucous glands of the lungs secreting a fluid, that taints the expired air in this manner. The decomposition of the fat, which sometimes disappears very suddenly in fevers, may give some ground for the supposition, that a large proportion of these exhalations are composed of hydrogenous gas. But whether we can go thus far or not, what is separated from the body, it is plain, is more disposed to decomposition, than when the body is in health. Now this process will still go on, whether exposed to the atmosphere or not, with this difference, that, by exposing substances which have imbibed the exhalations of the diseased to a free air, the noxious gasses will be dissipated as quickly as they are evolved: while on the other hand, by laying the cloaths in a heap, packing them firm in a chest, or making up cloth into bales, the gasses are concentrated into a small space; *qua data porta ruunt*, and woe to the man who first inspires them!

Dr. Trotter, however, does not affirm that these gasses themselves are the matter of infection, but only the vehicles of it.

The author has constantly remarked, that in those ships where contagion prevailed, many cases of regular intermittents, and remittents, occasionally appeared; and hence he seems to infer, that their causes are in a great degree similar.

With regard to the circumstances which favour the reception of contagion in the healthy body, it is observed, that cold weather, and the winter season,

constantly promote the action of typhus infection; and it appears from the author's experience, on the other hand, that warm weather, and a summer season, assist in its extinction.

The state of the body that favours the reception of contagion, is that state of debility, that succeeds to all preternatural excitement; such as fatigue after labour; the languor which follows debauch, as hard drinking and excessive venery; cold after being over-heated; approaching the sick bed with an empty stomach; fear of being infected, &c. and more particularly the condition of the body after intoxication.

‘The withdrawing of any accustomed stimulus,’ the author observes, ‘from the body, also favours the action of contagion, and the effluvium of marshes. Thus, a sailor thinks he will escape a fever as long as his tobacco lasts, and dreads the end of it. An empty stomach is hurtful when exposed to either disease. Bleeding and purging are hurtful; they act by leaving the body rather in an absorbing than perspiring state.’

‘The application of cold to the body, whether from the surrounding atmosphere, or from cold water, or wet cloathing, and whatever gives the sensation of chillness to the surface, favour, in an especial manner, the action of contagion and marsh miasma.

‘I have often remarked in the wards of Haslar, during cold weather, that weakly patients, just recovered from fever, frequently relapsed, by getting up, though they did not go out of doors. The allowance of coals at that time was too small for a large ward: besides, the body thus debilitated, was very sensible of cold air. We also see instances of relapse by a person going too soon out of doors, or a sailor, on board, exposing himself too soon on deck. The convalescent among the Portuguese, on board the Europe, by being exposed to the cold under the
half

half deck, where they lodged, were very subject to relapses.

‘ But I have known cases, of seamen while washing decks, seized with the rigors and shivering, which usher in the attack of typhus, after being exposed to the contagion in a sick birth. One of the most obstinate intermittents which occurred in the Vengeance, began in a landman, during the operation of scrubbing in a tub of cold water: this had been ordered by way of punishment for dirtiness. Now I apprehend the cold, in these cases, accelerated that accession of fever, which, but for it, might have been delayed for a length of time.’

Heat is considered by Dr. Trotter, as one of the most powerful correctors of contagion; it rarifies foul air, or what may be spoiled by respiration in crowded apartments: applied to substances imbued with animal miasma, it will dissipate that, or convert it into an inert mass, so as to be harmless; wherever there is moisture it will dry it; and above all, it is useful, as a general stimulus to the body; keeping it warm, and thus fortifying it against cold, which so evidently tends to dispose it to receive infection.

Of the substances used in the fumigating process, he thinks that many are not only useless, but hurtful. ‘ The whole preservative means are comprized’ he observes ‘ in the immediate removal of the sick, cleanliness in person and cloathing; fires, to keep the people, in the winter season, warm; avoiding cold and moisture, fatigue and intoxication, and keeping the ship dry, and properly ventilated. In an infected ship, an active and sensible officer will be employed in airing his people’s bedding and cloathes; distributing orders to the inferior officers, to see that their divisions of the seamen are clean in their persons, that their dirty things are washed twice a week, and that they have cloathes sufficient to keep them warm. If the weather is cold, we shall see

him ordering the decks to be dry rubbed with sand, or scrapers, and washing with water laid aside; his men will not be allowed to go aloft when it rains, or into boats when it blows hard. To give the decks a cleanly appearance, they will be well white-washed fore and aft, above and below: and lastly, to combine in his method the advantages of pure air with warmth, the ports will be opened to leeward, and, only the scuttles to windward; or the whole fitted with sashes of bunting, and stoves lighted in every part that can do good. To all these means of preserving health, amusements will be found to keep the minds of the people in action; violins, and other instruments of music, being common in most of the King's ships, are usually employed in the evening, and the seamen and landmen are seen joined in the dance. A physician of a fleet, who may visit a ship under the command of an officer of this description, though armed with a diploma, and with the chemistry of the elements at his fingers ends, will find that very little has been left for him to do; whether his doctrine of prophylactics, be the *vinegar of the four thieves*, or the fumigations of modern physicians, under the scientific appellations of Sulphurous Gas, Muriatic Acid Gas, or Nitrous Gas.'

The author supposes, that by the fumigating process of Dr. Carmichael Smyth, the very substance is introduced, which we ought to avoid, and which is the vehicle, if not the noxious cause itself: this is nitrous gas, between which and azotic gas, he says, there is no great difference. But this reasoning is surely inadmissible. A small variation in the proportion of the component principles of bodies, is found to alter altogether their chemical properties; and very probably, their effects in the animal œconomy are no less varied. It would be a curious mode of arguing to assert, that because atmospheric air is composed of the oxygenous and nitrogenous gasses, that nitrous air, which is formed
of

of the same principles, but differently combined, should be equally useful in respiration, or nearly so. The author also adduces in his favour, the opinion supported by Dr. Beddoes, that the phenomena of typhus are attributable to the diminution of oxygen in the system, and that the cure depends upon restoring this lost principle. But we believe this to be amongst the Theories which Dr. Beddoes has professedly abandoned.

We entertain no doubt of the utility and general efficacy of the means pointed out by Dr. Trotter for the removal of contagion: they are supported by experiment: the utility of employing the fumes of the mineral acids, likewise, rests on the firm basis of observation and experience; and until it can be shewn, that the matter of contagion is wholly of chemical origin, and not at all governed by the principle of life, we are not warranted in laying aside, on speculative grounds merely, the use of means, most powerful in destroying animal combinations, and which experience seems to confirm the good effects of.

The subject next treated of is typhus. The history of the disease is accurately drawn up, but differs little or nothing from that of former writers.

With respect to the treatment, the author divides the disease into two stages: the first comprehends the early symptoms, or as long as chills and heats alternating with each other, can be distinguished; the second stage, is the state of stupor which follows, but which sometimes appears also, without any previous chills and heats having been observed.

In the early stage, antimonials are recommended, first premising an emetic; and if an intermission is procured, the bark should be exhibited. Respecting the use of antimonials, the author observes, that his observation and experience do not enable him to speak in confirmation of their possessing a
febrifuge

febrifuge power; nor does he suppose that such a power is to be found in any other medicine.

‘ The quality it has been said to possess, of determining the blood to the surface of the body, and thereby removing the constriction of excretories, and softening and relaxing the skin, are only proofs of its exerting a stimulant power. During its use the patient should either be kept warm, or lie in bed, and drink moderately of diluting liquors. This method renders it less liable to act on the stomach and bowels. It is only in the first stage of Typhus, that this medicine appears to be useful: we have no doubt when taken as has been directed, it has had very considerable effects in our practice. After having produced full vomiting in the first instance, I think the milder preparations only should be continued. When the tartarized antimony has been well rubbed with magnesia or chalk, which I suspect, abstract a part of the acid, while it is exhibited, their powers together are much like the effects of James’s powder, or the antimonial powder of the dispensary. Such has been our practice in counteracting the early symptoms of infection, and in curing the first stage of Typhus.’

In the second stage, the indication is, to support the body by the nourishing and stimulating articles of diet and medicine, that are most grateful to the sick, that sit easy on the stomach, that procure refreshing sleep, recruit the spirits, and that do not exhaust by any indirectly debilitating effect.

The author does not speak very favourably of the use of bark in typhus. In mild cases where the disease never arrives at the state of stupor, or where there are regular remissions, he thinks bark is useful, and favours recovery. But he would confine the use of it to the mild degree of the disease, and during the convalescence from the state of stupor.

Of the use of wine, the author speaks in high terms; but he properly cautions us to proportion

its

its quantity to the degree of the debility, and, in some measure to the appetite of the patient.

Opium he considers as analogous to wine, but far less proper as a cordial or general stimulant. But in urgent cases of Singultus, Diarrhœa, or whenever there is acute pain of any part, and to assist the natural propensity to sleep at the natural hour when wanting, he has recourse to this remedy. Of the other remedies commonly used in fever, little is said.

Ague is the subject next treated of. The mode of giving bark, which the author found most efficacious, was to exhibit half a drachm every half hour, for four hours before the expected paroxysm.

The following remark on the effect of opium in this disease, deserves attention.

‘ It has been already mentioned, that Agues became very frequent in the Vengeance towards the decline of the contagion. Many of these cases happened at sea; and from having them so much under my own eye, I resolved to try the full effects of opium in preventing the fit. The greater part of my patients were Irish landmen, lifeless, timorous beings, and indolent to an extreme, when indisposed. The moment they felt the first approach of the fit, they were sure to run to the cockpit for relief. The dose of opium was generally administered at the door of my cabin, for there was seldom occasion for them to go to bed in the sickbirth. This was done, either under my own directions, or those of the first mate, Mr. Peter Blair, in whose abilities and attention I had much cause to confide. If the first dose did not bring on some warmth in the space of ten or fifteen minutes, from twelve to twenty drops were given in the same manner. The changes of the pulse and feelings of the patient were often carefully watched. We never gave less than thirty drops the first time, and never needed to go beyond sixty in the space of
an

an hour, for in no case did it fail to give relief in this time. In a few minutes from the exhibition of tinct. opii, an exhilaration of spirits was perceived, which was quickly followed by a relaxation of the surface, the countenance looked cheerful, and a flush was spread on the cheek. The pulse from being weak, quick and sometimes irregular, became less frequent, full and equal; an agreeable warmth was diffused over the whole frame, and every unpleasant feeling vanished, sometimes in a quarter of an hour. Sleep now and then followed a large dose, but generally this did not happen. As soon as any symptoms indicated another paroxysm, whether on the following day, or not till the tertian interval, the tinct. opii was repeated in the same manner as directed in the former fit, and always with equal success, so that the patient seldom experienced much tremor or shaking. The second paroxysm was commonly an hour or two later in the day than the preceding one; and but few instances were met with, where any indisposition indicated a third attack at the expected period of accession. The patients themselves were not a little surprized at the sudden change of their sensations, by so small a quantity of medicine: they were certainly the compleatest cures that ever came under my observation, and may be justly said to have been effected, *certe, cito et jucunde.*

A Letter is inserted here from Mr. Thomas Grey, surgeon of the Glenmore, dated September 1796, which relates the successful application of the Tourniquet to the extremities, in two cases, as recommended by Mr. Kelly, in the Edinburgh Medical Commentaries. The instrument was applied to the opposite leg and arm, and kept on for about fifteen or twenty minutes; taking care to unscrew them as occasion seemed to require. This procured a very effectual remission. In one of the patients the fit was violent when the Tourniquets were applied: and when they had remained on for about ten minutes, he called
out

out that he was quite well ; and by continuing it a little longer, the fit went entirely off. In the mean time, the usual remedies were freely used, as bark, wine, &c. Thus by carefully watching the disease a few days, its progress was completely put a stop to.

Some observations are next offered on the Yellow Fever ; but as the author has had himself no experience of this malady, we shall not enter into particulars.

Epidemic Catarrh, Rheumatism, Small-pox, and Intoxication engage the author's attention, but afford nothing particularly novel.

With respect to Dysentery, the author observes, ' That a medical man, like other adventurers, sometimes acquires professional knowledge from personal sufferings : the danger which I had escaped, and the distress that I underwent, made me resolve to pay particular attention to this disease in future. Since that period, I have treated it, in a variety of cases, on the coast of Africa, in the West Indies, as well as in England, among seamen, and in most other conditions of life.

' I believe it will happen more frequently elsewhere, than among sailors on board, that blood-letting may be found necessary in a beginning Dysentery ; there are certainly, in some cases, evident symptoms of increased excitement ; and probably, a tendency to local inflammation in some part of the intestinal canal. Where the stomach is much affected with bad taste, nausea, and inclination to vomit, I think an emetic administered, to excite a free discharge of its contents, should never be omitted in the beginning : if the medicine given can be so managed, as to act as a purgative at the same time, so much the better. For this purpose, twelve or fifteen grains of ipecacuanha, with a grain and a half of tartarized antimony, divided into three doses, and given at the distance of half

half an hour, will generally answer the intention; otherwise a saline purge should be taken shortly after the emetic. This being done, unless symptoms of increased excitement prevent it, I always give an opiate combined with some antimonial preparation, with a view to open the skin. The patient ought to be confined to bed during its operation, which ought to be encouraged by drinking plentifully of some grateful liquor.

‘ According to the urgency of pain, tormina, and tenesmus, I repeat the purgative medicine; and always follow its operation with the opiate and antimonial, or opium with ammonia. The reasons for condemning free doses of opium in this stage of Dysentery, seem to have been owing to the neglect of giving a purgative before. If, therefore, the purge has not preceded the opium, the latter seldom fails to do harm. The griping that is commonly aggravated after the space of six or eight hours from the taking of the opiate, can only be relieved by a brisk purge: but when the one follows the other as we have directed, the disease has rarely continued long or obstinate. In the latter stage, where astringents have been recommended, unless their exhibition has been preceded by purging, they have generally done harm in my hands. The neutral salts well diluted, I have always found the best purges.

‘ When the Dysentery has advanced to its chronic stage, as happened with myself, it appears to be continued more from habit than other causes. In my own case, whenever the opium was intermitted at bed-time, although the dose never exceeded five grains, the liquid dejections returned, with more or less of griping at the same time. In this manner it continued with me for two months, during which I acquired flesh and strength, that at last allowed me to diminish the medicine gradually, and leave it off. Much, however, might depend on my constitution, and the period of life, for I was then under twenty.

The

The cure, therefore, seemed to be effected by the opium overcoming the habit; which enabled the natural actions of the intestinal tube, to recover their former propensities.

‘ The vitriolic solution, so strongly recommended by Dr. Mosely, has always failed in my practice; nor have I found any reason for preferring the mercurial treatment of Doctors Houlston and Clarke. Riding on horseback, with other active exercises, and flannel cloathing, have done more in the chronic Dysentery than any remedy which I have seen tried; but the early stage of the disease is the fittest period for the cure, and if omitted, pain and suffering are the lot of the patient.

‘ I have only dissected one subject for this disease; nothing uncommon was detected: nor do I think that the dissections of other physicians, have thrown any light on the pathology of Dysentery, so as to direct a better method of cure.

Abundant proof is afforded of the efficacy of the recent vegetable acid, and of fresh vegetables in general, in the treatment of Scurvy. This once-formidable disease seems now to be deprived of all its terrors; and its prevention, as well as cure, ascertained on indubitable grounds.

‘ Whatever, therefore, may be the theory of sea-scurvy, we contend, that recent vegetable matter, imparts a *something* to the body, which fortifies it against the disease: and that in proportion to the quantity of this *something* imparted, making allowance, at the same time, for external causes, which counteract its effects on the constitution, the symptoms will sooner or later appear. The preservative means ought, therefore, to be attended to, and we ought to trust only to the vegetable acid, when we can do no better. The juice of lemons long continued, tends to weaken the stomach and general habit,

bit, and produces emaciation in proportion to the length of time it is used.

‘ We have also found, that the preserved juice is very inferior to the fruit, in its intire and recent state; although, I believe, that great attention was paid to its preservation, and when there could be no suspicion of vinegar, or other acids, fraudulently added. Three dozen of sound lemons did generally as much as a gallon of the juice. Yet we have seen, in Mr. Moffat’s report, that he had cured many with the juice that had been near two years squeezed from the fruit.

‘ We have, from this practice, established another fact, of the first importance in naval operations. We have often heard people talk of land air, and land recreations, for the Scurvy. There is not at present an officer in the Fleet, that, in doing justice to either his people or his country, would prefer the cure out of a ship. Nay, there is often the most urgent necessity for keeping them on board till they acquire a certain degree of strength. In the very weak stage, a scorbutic patient cannot bear the external air, which has been long observed, and recently confirmed, by the five men dying in the boat belonging to the Prince of Wales, between the Downs and Deal Hospital.

‘ Those who may consult these pages, and are acquainted with the opinions, which I formerly published, on the Theory and Practice of Sea Scurvy, will see, that this immense field for observation, which the Channel Fleet has afforded, seems to strengthen all my old conclusions. Nothing remains for me to retract. The whole has been confirmed by the experience of a great number of surgeons, of approved abilities, in the profession. Dr. Beddoes, in his remarks on my work, laid much stress on the impure air of ships in producing Scurvy. If this had so much effect, surely it would have counteracted the cure, when the seamen remained on board: but that has not been observed. The surgeons generally re-

marked,

marked, a very great difference on the second and third day ; and a week was long enough to complete the cure. The discipline of the officers in the Fleet, in whatever related to health, has rendered them famous. To have thought of foul air, as a cause of the Scurvy, when it appeared in the Royal George and Queen, would have been the last resource of a physician, investigating causes, who had witnessed the admirable system of duty practised by Captains Domet and Bedford.

‘ I shall conclude my observations on this disease, by introducing a letter from Mr. Baird, surgeon of the Hector. This ship left the Channel Fleet in May, when our sufferings were great.

‘ Hector, Spithead, Dec. 4th, 1795.

‘ S I R,

‘ As I consider the Navy indebted to your exertions, for the very valuable institutions of lemon juice ; I should think I failed in my duty, if I did not communicate to you, the wonderful benefit derived from it in the Hector.

‘ On my joining this ship, in May last, I found her under orders for foreign service ; our destination supposed to be the East Indies. Several of our ship’s company were labouring under Scurvy, in an advanced stage, all of whom I sent to the hospital, previous to our sailing. But, as I had great reason to suppose, that the scorbutic taint was general, I rather felt discouraged at the idea of encountering so long a voyage, under such circumstances. Indeed my fears were soon confirmed ; for we were but a few days at sea, when the sick list was considerably increased with scorbutic patients : some with their gums highly putrid, legs and thighs much swelled, hams contracted, and so very ill, as to render them totally unfit for any kind of duty. The small beer not being expended, the instructions from the Sick and Wounded Office did not exactly warrant my issuing lemon juice and

sugar. But, as it seemed the only probable remedy, I solicited Captain Montague to lose no time in giving it to the ship's company, in the quantity directed, as a preventive; to be mixed with a proportion of water, as sherbet; and also to allow me to issue it, in any quantity I might think proper, in bad cases.

‘ I began with giving the lemon juice, in the quantity of an ounce and half daily; and, encouraged by the material change I perceived in about four days, I increased it to three or four ounces *per diem*; always taking care to join a sufficient quantity of sugar, to prevent it from irritating the bowels: in twelve or fourteen days, the worst of them were able to return to duty; every symptom being then removed, except some slight degree of stiffness in the hams, which gradually wore off.

‘ That the lemon juice was equally serviceable as a preventive, is I think evident from the following observation; for the first month, new patients frequently complained, but after that time, the only scorbutics we had, were men pressed out of merchant ships returning from long foreign voyages.

‘ We sailed with the outward bound East India trade on the 24th of May last; and returned the 19th of November, with the homeward bound trade; having been as far as 28° and a half south; about three weeks in harbour from the time of sailing till our return; and part of that time at St. Helena, a place well known for its barrenness, and the very little refreshment which it produces. We have returned to Spithead without losing a man by Scurvy; nor have we had occasion to send a single man, in that disease, to the hospital.

‘ When I consider the alarming progress which the Scurvy was making among the Hector's ship's company, previous to the administration of lemon juice as a preventive; the sudden check that disease met with afterwards; the powerful effect of the acid in very bad cases; I think I will not be accused of presumption,

tion, when I pronounce it, if properly administered, a most *infallible remedy*, both in the cure and prevention of Scurvy.

I am, S I R,
Your most obedient,
and humble servant,

(Signed) *A. Baird.*

To Dr. TROTTER.

We shall pass over some observations of the author on subjects of inferior moment, or which contain nothing peculiarly new or important; and shall conclude our account of the work, with the case of amputation at the Shoulder Joint, performed by Mr. Burd, surgeon of the Niger, which reflects no small honour on the operator.

‘ April 26th. Last night, Jean Moeriéton, a French officer, apparently a healthy vigorous man, about 24 years of age, was brought on board here, having received a wound with a musquet ball in the right shoulder. Upon examination, I found the ball had entered at the deltoid muscle, about two inches above its insertion, and passed out at the superior part of the scapula. I dilated the anterior wound, and readily discovered the neck of the os humeri to be fractured, and much splintered. I also was enabled to feel, with the first finger of my right hand, introduced at the wound, that its head was shattered into two or more pieces; a fracture of the scapula, where the ball passed out, was very evident; the clavicle was thrown so much upwards, as totally to prevent my being able to distinguish the first rib above it. Having ascertained the nature of the wound, I considered the operation as indispensable, but at the same time resolved to defer it till the first inflammation should subside, and then perform it; therefore nothing more was done the first night, than to cleanse the wounds, apply light dressings, and a proper bandage. An anodyne was given him, which procured a tolerable night. On inspection this morning, the anterior wound was

found to have bled considerably ; the dressings were removed, but no artery could be discovered, to be secured. The wound was now dressed again as last night, and as there was a great deal of tension about the parts, a cataplasm was applied.—Repet. haust. anodyn. h. f.

‘ May 1st. Has had tolerable rest these four nights past, with the use of anodynes ; p. little quickened ; b. bound ; eats sago for dinner, with a little wine in it.—Bib. aq. hord. Wounds are dressed daily ; have a very irregular lacerated appearance, and discharge copiously a highly foetid pus, of pretty good consistence.—Cont. cataplasm.

‘ May 3d. As the inflammation was nearly, if not entirely gone, and a very copious discharge of pus continued, by which the patient was much debilitated, at the same time the weather so moderate, that the ship could be kept pretty steady, I determined to perform the operation to-day. When he was placed upon the table, which was in the gun-room, I endeavoured to make compression on the artery as it passes over the first rib, but without success ; for not only the clavicle’s being thrown upwards, but also some degree of tension, prevented its being effected, except very partially. I now attempted to make the compression in the axilla, but the head of the humerus being so much shattered, yielded to the least pressure ; finding both fail, I felt myself very unpleasantly situated ; but without the operation’s being performed, it was evident that death was the certain consequence to the patient ; therefore resolved to give him the chance.

‘ Having every thing prepared, I appointed a French surgeon (who was surgeon of the vessel the patient was wounded in) to make what compression he could upon the artery above the clavicle, which, as mentioned before, was only partial. Mr. Brown, surgeon’s mate of the Niger, stood at hand, to give me the necessary instruments, apply ligatures, &c. The

The arm was now stretched out, and supported at nearly a right angle with the body, the shoulder projecting over the side of the table. A circular incision was now made through the skin and cellular substance, about the insertion of the deltoid muscle, into the humerus; before proceeding further, any divided blood-vessels were secured. The teguments retracted about three quarters of an inch. At the edge of the retracted teguments, on the inner and under parts of the arm, I applied the knife, and divided the muscles down to the bone, all round, except a portion in which the humeral artery was included: any large blood-vessels that were divided by this incision were secured. In the undivided portion of muscle, I distinctly felt the pulsation of the artery; upon which I placed the thumb of my left hand, and then finished the division of the muscles down to the bone: upon the artery being divided, a prodigious flow of blood followed. (Had the French surgeon been of much service, he now forsook me, and removed the little compression he was making.) I was very soon enabled to pass a ligature round it, and secured it, fortunately without the loss of so much blood as might have been expected, when we consider the size of the vessel, its vicinity to the heart, and almost a total want of compression, for my thumb effected only a partial one; as it was secured with the needle, the nerve was inevitably included in the ligature. (During the whole of the operation, Mr. Brown gave me very great assistance, but particularly at this part of it.) I now secured every blood vessel; for even the smallest bled freely, after the larger were secured. With a strong round-edged scalpel, I made a perpendicular incision down to the bone, beginning at the lower part of the wound (which I had dilated upwards the first night he came on board) and terminating in the circular incision, about an inch and a half on the outside of the humeral artery, the bleeding vessels were immediately secured. Finding the

deltoid muscle was in a gangrenous state, I made the upper flap about one third smaller than the lower, and proceeded to separate the flaps from the os humeri; which being effected, the arm came away, not leaving half an inch of the humerus attached to its head. I now saw that the head of the humerus was shivered into various pieces of different sizes. After cutting the capsular ligament all round, it was, with some difficulty, I removed the first piece; the others came away easily, accompanied with a part of the glenoid cavity. I found two pieces of the scapula detached, which were dissected out; one of them was the greatest part of the spine: the removal of all these, together with the gangrened flesh, protracted the operation to a great length of time, which the patient bore with astonishing fortitude. In the course of the operation, eight or ten vessels were secured, some with the needle, others with the tenaculum. After cleansing the surface of the flaps, and applying a second ligature upon the humeral artery, about one quarter of an inch above the first, they were brought in contact, and adhesive straps applied to retain them together, leaving an aperture in the most depending part, sufficient to discharge the remaining very small pieces of bone, which could not be removed by the knife. After the straps, pledgets of cerate, or lint, were applied, and a compress of lint and tow, with a flannel roller over all.—An anodyne of tinct. opii, gr. 40. was given immediately, and repeated at bedtime.

‘ May 5th. The posterior wound was dressed to-day; discharge copious; the patient complains of almost constant nausea; he has also some spasmodic affections, frequently; no stool since the operation; in the afternoon he complained of pain in the lower belly, and inability to pass urine, with frequent tendency: the pulse quickened; skin hot; great thirst; with some head ach. Warm fomentations were applied to the belly, and he soon passed his urine freely.—

ly.—Hab. Enem. Commun.—A saline draught was given him every second or third hour, and an anodyne at night.—Dressings have not yet been removed from the stump.

‘ May 7th. Soon after the operation of the injection, most of the unfavourable symptoms were considerably relieved ; and, by continuing the saline mixture, went intirely off. This morning there was a recurrence of the pyrexial symptoms. I removed the dressings from the stump, and put fresh applications in their place ; soon after which the febrile symptoms subsided. The flaps were found to have adhered nowhere ; their surface have a very sloughy appearance. Adhesive straps were applied to the superior part of the flaps, so as to keep them slightly in contact : the inferior part was lightly dressed. As suppuration had already begun to take place, over all a compress of flannel roller was applied. The posterior wound looks well, and discharges a laudable pus ; it is dressed daily. Sago, with a little wine, is given him for dinner : drinks water, with a small quantity of Oporto wine in it.—Omitt. Haust. Anodyn.

‘ May 9th. About an inch and a half of the lower part of the upper flap is in a gangrenous state ; discharge very copious ; extremely foetid, but of pretty good consistence ; p. calm and weak ; skin moist ; b. rather costive ; rests but indifferently without an anodyne. Repet. Haust. Anodyn. h. f. ut antea. Eats a little mutton for dinner ; and in the course of twenty-four hours drinks nearly a bottle of Oporto wine, in water : he is dressed now twice a day.

‘ May 11th. Discharge continues very great and foetid ; p. regular ; several of the ligatures have fallen off ; his diet and drink, as mentioned last report, continued. Omitt. Haust. Anodyn.

‘ May 14th. Part of the superior flap, that was in a gangrened state, fell off to day : the lower flap looks extremely well, and granulates kindly ; discharge

continues copious; all the ligatures, except that of the humeral artery, have been removed. The patient has great spirits; general health good; and sleeps very well, without the use of an anodyne.

‘ May 16th. Granulations are shooting out from every part of both flaps; discharges a well digested pus, not so profuse, and little fœtor. This morning I accompanied him to Forton Hospital, where he was left under the care of Mr. David Patterson, surgeon there.

‘ Aug. 17th. He was discharged perfectly well, and returned to France.

William Burd.’

Niger, October 14, 1796.

ARTICLE II. *Annals of Medicine for the Year 1796: exhibiting a concise View of the latest and most important Discoveries in Medicine and Medical Philosophy.* By ANDREW DUNCAN, M. D. sen. and ANDREW DUNCAN, M. D. jun. Edinburgh. Vol. 1. Octavo, 469 pages, price 7s.—ROBINSONS, London, 1796.

IN our account of the last volume of Medical Commentaries we mentioned, that it was the editor's intention to publish a volume annually, under the above title. The present is the first of the intended series, the plan of which is nearly, or rather altogether, similar to the former periodical work.

The first section, as usual, is devoted to an analysis of several new books on the subject of medicine. Of those, published in this country we have already given detailed accounts; and shall now proceed to notice briefly the foreign ones.

The first article is entitled, *Surgical and Medical Treatises on various Subjects respecting Poland.* By F. L. DE LA FONTAINE, Aulic Counsellor and Surgeon

to

to the King, &c. The only treatise of which an account is here given, is on the Trichoma, or Plica Polonica, a disease endemic in Poland, and the neighbouring countries, in which a morbid matter is critically deposited upon the hair, and binds it together in such a manner, that to unravel it is impossible. Experience shews, that it is contagious, and very often congenital. There is no certainty when or where it first arose; the Arabians, Greeks, and Romans, do not mention it; but some modern writers make the date of its origin, 1387, and add, that it came from Tartary.

The symptoms which precede this affection are various, and such as usually usher in eruptive diseases in general.

The proximate cause of this disease is, according to M. de la Fontaine, a peculiar morbid matter, which is clammy and acrid, has its seat in the lymph, and is deposited critically upon the hair or nails. Its exciting causes are equally uncertain, for neither the air, water, nor food, seem to have any effect in producing it; nor are cleanliness and regular combing of the hair any defence against it.

In the beginning of the disease, M. de la Fontaine recommends resolvent, attenuant, saponaceous, demulcent, and emollient remedies, to prepare the morbid matter for the crisis. If these be not sufficient, he adds extract of aconite, or cicuta, calomel, or some antimonial. In general, he says, antimony is as specific in this disease, as mercury is in lues. If it be complicated with lues, corrosive sublimate produces the very best effects; but salivation is highly detrimental in every case. In order to bring about the crisis, he makes use of sudorifics. The lycopodium is praised by old physicians as a specific; but unjustly. These remedies can only be used, when no fever is present; in this case, blood-letting and evacuants must be very cautiously used. Our author compares it to the small-pox, where, when the fever is too weak to produce the eruption, it must be increased; when

when it is too violent, it must be diminished. Hence the strength of the patients must be often supported with generous diet. The people believe in a number of specifics, but the disease has not become less frequent. External remedies are almost always necessary, such as the application of warmth to the head, in the form of vapour, warm bath, or decoctions of various plants; a decoction of soap is often of great use, when the head-ach is violent. Sinapisms and blisters are likewise applied with advantage. If the morbid matter be deposited on the surface of the body, it occasions malignant and obstinate sores, which give a great deal of trouble. Antimony must always be an ingredient in whatever is applied to these. If the matter have a tendency to deposite itself in the nails, it must be encouraged by the application of stimulants; such as, tincture of cantharides, blisters, or by touching a fresh plica with the fingers. Against the vermin, hair-powder rubbed with mercury is the best remedy. If all these means be inadequate to produce the crisis, inoculation of the disease will often effect it. It is performed by putting on a cap which has just been worn by one who has a recent plica.'

After a complete crisis, the plica separates from the head, and remains attached only by the sound hair. If it has become dry, and all symptoms have ceased, it may be cut off. On the contrary, if recent, and the symptoms still continue, its removal is attended with great hazard, often inducing other violent diseases.

The second treatise is on Bronchocele and Cretinism, from Richter's Surgical Library, vol. 15. In the treatment of the former, calcined sponge is highly extolled, and said to be constantly successful; yet we find soap also recommended; and when *neither the one nor the other* of these remedies were of service, the author gave sulphurated pot-ash, dissolved in water, 30 grains daily in a quart.

On the asthma acutum periodicum of Millar, (the hives); and the angina polyposa, membranacea (the croup). A diagnostical Fragment, by Dr. J. E. WICHMANN: from Hufeland's Journal, vol. 1. 1795.

These two diseases, the author says, have been generally confounded with each other, which has given rise to the constant dispute, whether they were spasmodic or inflammatory. The acute periodic asthma which Millar describes, differs, from Croup, chiefly in its occasional remissions, and in its wanting those symptoms of fever which accompany the latter, and point out its inflammatory nature. As it appears, however, of the first consequence in a practical view, that the distinction between diseases so opposite in their nature and mode of cure should be accurately known, we shall give the comparative view of the symptoms of each, which Dr. Wichmann has here laid down.

‘ Both diseases agree in beginning in so slight a manner, as often to lead the physician to think them simple catarrh.

‘ Although Millar’s asthma sometimes attack adults, yet children are in general the victims of both diseases,

‘ The patients die in both diseases equally soon. But when a child dies suddenly, from an attack of difficult respiration, we may be certain that it has died rather of Millar’s asthma than of the croup.

‘ Millar’s asthma is never epidemic, but always sporadic: it arises, however, like the croup in cold weather, and generally from catching cold; and Dr. Wichmann says, he might add, during the blowing of easterly winds. Home found the croup frequent on the sea-coast; Ghisi, epidemic in Italy in 1749; Rosenstein, and others, in Sweden, and von Bergen almost so. Therefore, when several children at the same place lie ill of a suspicious difficult respiration, and we have no right idea of the disease, it is
much

much more probably of croup, and we should have recourse to resolvents, until the diagnosis become clear. Dr. Wichmann says, that from his own experience, he has no evidence that croup is contagious, but that its probability rests upon what others have said; whereas the Millar's asthma is certainly not contagious.

‘ The difficulty of swallowing, in both diseases, is occasioned only by the patient's not being able to retain their breath long enough, without danger of suffocation. However, in croup there is a dead pain at the top of the windpipe; and Home discovered a slight swelling there; which is never the case in Millar's asthma.

‘ Dissection points out the diagnosis most certainly, but too late to be of any use. In the croup, a collection of mucous, sometimes purulent, but generally sloughy matter, is found in the windpipe, and sometimes even in the bronchiæ.

‘ During the life of the patient, the peculiarity of sound in respiration, is one of the most certain distinctions. The cough is also different; in Millar's asthma, it is at most inconsiderable; but in the croup, it seems as if something were loose, and should be coughed up, which often happens to the relief of the patient; it is also much more frequent, and continued even to vomiting, and is increased from taking in aliment: so that on this account also children refuse to swallow.

‘ Lastly, the course of these diseases is quite different. In Millar's asthma, the symptoms remit, and again return with greater violence than before; whereas, in the croup, they come on gradually, and continue constantly increasing; and the urine is not, as in the other disease, pale.

‘ Dr. Wichmann concludes this accurate Essay, with lamenting, that he has not so certain a remedy to recommend against the croup, as musk is against Millar's asthma, for here it does no good. Hence, though

though similar, these diseases require different treatment.'

Art. 4. Of the Effect of Gratiola in Madness, by L. F. B. Lentin, from Hufeland's Journal. Three cases are here recited, which appeared to give way to this remedy; half a scruple in powder being given every morning and evening. Its operation was that of an active purgative.

Art. 5. Remarks upon the Dysentery which was epidemic at Jena, in Autumn, 1795, and the distinguished good Effects of the Nux Vomica in it. By Prof. C. W. Hufeland.—From the same. Rather more than a grain of the extract of Nux Vomica was given every two hours. Its principal effect is narcotic. It is proper to state that in larger doses its operation may be attended with danger. A woman, by mistake, took six grains of the extract at once, six hours after she had already taken three. She was seized with such weakness in her limbs, that she could not stand; universal trembling, giddiness, stupidity, anxiety, and a small intermittent pulse followed. In the stomach and bowels she felt no heaviness, pain, or sickness. After she had lain quiet some hours, and drunk much tea, and had got a vinegar clyster, these symptoms went off without having produced any other consequence. The dose of the powder is from six to ten grains.

Art. 6. Experiments and Observations upon Beddoes's new Method of curing Consumption, with the Description of an Apparatus for the Respiration of Gasses. By Dr. Girtanner, of Gottingen. As every fact that tends to throw light on the subject of aërial medicine is important, we shall give this article at length.

'The writings of Dr. Beddoes, and the hopes of giving relief in this dreadful disease, induced Dr. Girtanner

Girtanner to make similar experiments, especially as he was not satisfied with the practical part of Dr. Beddoes's work, because attention was not paid to the different species of consumption, to the stage or cause of the disease, because the histories of the cases were not sufficiently accurate, and because the carbonic acid, azotic, and hydrogen gases, were indiscriminately recommended.

‘ The difficulty of providing a fit apparatus, was surmounted, by making some alterations on that described by Dr. Menzies, in his inaugural dissertation. Dr. Girtanner has given a full description and plate of it, and adds, that it has been approved of by every one who has tried it.

‘ To proceed methodically, he resolved to make a series of experiments with one kind of gas, and he selected the carbonic acid gas, because it is specifically heavier than the atmosphere, and will therefore sink to the bottom of the lungs, so as not to be immediately expired again ; because it has been found, by the experiments of Ingenhous and Beddoes, to diminish pain, and promote the healing of wounds ; because it is easily prepared without expence or fire ; and lastly, because the use of hydrogen gas is attended with danger, if expired near a candle, from its conversion into hydro-carbonous gas.

‘ On the 3d of April, 1795, Professor Hoffmann carried Dr. Girtanner to see a student of twenty-three years of age, with whom he wished the new method to be tried. The patient lay upon a sofa, unable to raise himself up ; his countenance was fallen, his whole body extremely emaciated, his tongue of a bright red colour, his hands burning hot ; his pulse 120 in a minute, and his voice hoarse and weak. He complained of violent cough, which deprived him of sleep all the night, and troubled him much through the day. His expectoration was copious, tough, thick, and of a sulphur colour. During the night, he sweated so much, that he said he felt as if he lay

‘ in

in water. He had also a violent colliquative diarrhoea, and occasionally bleeding at the nose, which it was difficult to stop. Upon inspiring deeply, he felt severe pain in the right lung. He was first affected a year and a half before, after cold, and was daily growing worse, though he had followed the advice of two of the most celebrated physicians at Goettingen, who had now given him over.

‘ In the evening, Dr. Girtanner made him breathe a mixture of one quart of carbonic acid gas, and two quarts of atmospheric air. After lying a few seconds without motion, he said, he felt as if relieved of a weight, which till now had pressed upon him; he could breathe more freely, and he felt in the right lung, a soft warmth and pleasant tickling. In a quarter of an hour, he breathed a second portion, and in half an hour the third. He was ordered to live upon smoked and salted meat, abstaining from all vegetables, and to drink water and beer, but no wine. No other medicines were prescribed.

‘ Till the 7th of May, he breathed three portions of the above-mentioned mixture twice a-day. Afterwards it was increased to four portions each time. Until the beginning of May, he continued to recover: his appetite returned; he slept tolerably quietly the greatest part of the night, and without much coughing; his expectoration was diminished and less yellow; the bleeding at the nose had not returned; the hectic fever was slight, and lasted but a few hours; he was less emaciated, and could walk about his room and amuse himself. His pulse alone was not better. It was still small and hard, and beat from 120 to 130 in a minute.

‘ During the beginning of May, his recovery was almost stationary, which was however found to proceed from mental, and not physical causes. On removing them, he got so quickly better, that Dr. Girtanner discontinued, on the 6th of June, the use of the gas. He now slept well, had no night-sweats,
his

his cough was dry; his pulse in the morning 90, and in the evening 100 or 120; the red in his cheeks, and burning of his hands, had disappeared entirely, and he was able to walk abroad two or three hours at a time.

‘ On the the 3d of July, he was permitted to return to his common diet, as he was tired of salted meat, and complained that it made him cough.

‘ On the 4th, after walking when the weather was cold and moist, he was seized with a cold fit, and coughed the whole night; but, in the morning, only complained of coldness.

‘ On the 8th, he began again to use the gas. He now took twice a-day four portions, composed of equal quantities of atmospheric and carbonic acid airs.

‘ On the 9th, he observed, that his left lung was now affected, while the right seemed sound. This pain in the left side went off, however, after using his gas mixture two or three days; to mitigate the cough, he now took for some days, a weak opiate at bed-time, and from this time he recovered rapidly.

‘ About the middle of August, his cough ceased, his pulse was soft, and beat from 70 to 80 in a minute, he gained strength and appetite, slept well, and complained of nothing, except a trifling cough. On the 27th of August, he found himself strong enough to leave Goettingen, and to undertake a journey of about eighty miles on foot; which he performed, and is now, Dr. Girtanner has heard, very well.

‘ The noise which this cure made, induced Professor Richter to make a trial of the same method, in his clinical institution. The patient with whom it was tried, in general, breathed more freely for a short time after he had used the air. But it was unable to effect a cure; and, on dissection, the lungs were found completely suppurated with many small tubercles full of pus.

‘ A man of about forty, extremely thin, had been affected for four months with an obstinate dry cough, which

which did not yield even to opium. As he assisted Dr. Girtanner in his experiments, he was often obliged to respire some carbonic acid gas; and in fourteen days his cough left him, and never did return.

‘ Dr. Hempel, a practitioner at Goettingen, also employed it in one very far advanced case, without success. The inspiration of the gas immediately brought on a sense of weakness; the patient’s breathing became shorter, attended with anxiety and faintness, the pulse small and unequal. In a few minutes these symptoms ceased, and he noticed a sour taste in his mouth, and a burning sensation in his breast. The lungs seemed in a few days to become accustomed to the gas, for it did not produce these effects any more. The mixture was made stronger, and it again brought on the same symptoms, but they were now stationary, and ceased only with the death of the patient.

‘ The celebrated Ehrhart of Hanover used it also in his own case, under the direction of Dr. Wichmann. Unfortunately for botany, he found no benefit from it, but was obliged to give up its use after a few days trial, as it evidently increased his symptoms.

‘ Dr. Buchner of Hilburghausen was equally unsuccessful in a trial he made of this method of cure. It seemed to increase the difficulty of breathing; and indeed, the dissection clearly shewed, that the disease was such, that, to use the Doctor’s words, a new set of lungs could be the only cure.

‘ From these cases, Dr. Girtanner concludes, that the respiration of carbonic acid gas is a very active remedy, which in some cases is of great service, is of no use in others, and is even sometimes hurtful; and he calls upon the practical physicians of Germany, to determine each of these cases, by means of farther experiments.

‘ Dr. Girtanner promises to take another opportunity of relating his trials with azotic and hydrogen gases, both of which seem to have a much more beneficial action than carbonic acid gas.

Art. 7 Medical and Surgical Observations upon London, and the State of the Healing Art in England in general. By Dr. C. E. FISCHER, of Brunswick. The excessive, and almost indiscriminate employment of Opium, Bark and other active remedies in this country, affords the author occasion for much severe remark ; we may venture to add, *justly*.

Art. 8. Upon the use of the Lukewarm Bath in Fevers in general, and particularly in those called low Nervous Fevers. By J. D. BRANDIS, Physician at Driburg. Several cases are related in proof of the utility of warm bathing in fevers of the above description.

‘ The principal effect of the warm-bath in fevers is good in general, since it takes off the spasm of the skin, and those parts sympathising with it, increases the excretion by the skin, promotes the flow of blood through its vessels, and moderates the action of the nervous system, but without in any way diminishing the vital power or irritability. Such, says our author, is the opinion of Cullen, Selle, and of Marcard himself, where he proves that the warm-bath does not debilitate. According to our author, he seems to have been misled merely by the phenomenon which both of them, as well as Marteau, have observed, that in the bath the pulse often falls sixteen or twenty beats in a minute. Dr. Marcard ascribed this to a diminution of the vital principle ; our author explains it otherwise. A freer circulation in the small vessels of the surface, must, says he, diminish the flow of blood to the heart ; now the stimulus, which excites the heart to action, being less, its contractions become less frequent, though without the smallest diminution of the vital principle. Hence Dr. Brandis thinks the warm-bath not admissible in those fevers, where the cause lies in the *primæ viæ*, until that be removed, and only in putrid fevers, when the crisis
takes

takes place by the skin, nor in inflammatory fevers, where the vital principle must be diminished, which is contrary to the action of the warm-bath; although he believes, with De la Verniere, that it may be useful as an assistant remedy, particularly in inflammation of the intestines, on account of the sympathy between these and the skin. An irritable, melancholy man became obstinately constipated. His physician, thinking constipation must be removed by purgatives, gave at first neutral salts freely, then jalap, and at last, one morning, half a scruple of calomel, with frequent clysters of vinegar and water, and next morning a whole drachm of diagrydium sulphuratum. Constant vomiting, a small hard pulse, and violent pain in the belly, now came on, and the physician had resolved to venture every thing, as he said, and to make the patient swallow half a pound of pure quicksilver, when Dr. Brandis was called in, lukewarm bathing, bleeding, opiates, and the application of a blister to the belly, effected a cure. In those fevers in which the solids particularly suffer, our author thinks the warm-bath must be especially useful. For confirmation, he refers to Cullen, Richter, and Selle; and concludes with joining Marcard, in recommending it in malaria, arising, in warm countries, from marsh miasma; and in small-pox, where violent fever and spasm of the skin is present.

Johannis Christ. Reil. M. & C. D. Memorabilium Clinicorum Medico-practicorum, Fascic. IV. Some experiments concerning the effects and use of the calces of Bismuth and Zinc, constitute an important article in this collection.

‘ Some years ago, when Dr. Kerckfig visited Halle in the prosecution of his medical studies, Dr. Reil had formed the resolution of writing a complete history of these two articles. In the experiments which he was then engaged in making, Dr. Kerckfig assisted him with great dexterity. With the detail of these

experiments, together with some corollaries deduced from them, we are here presented.

A young woman was admitted into the hospital, labouring under amenorrhœa and an ulcer of the foot, from which there was regularly a discharge of blood every fourth week, for the space of some days. Six powders were ordered for her, each containing twelve grains of the calx of bismuth. From a dose taken daily, she was affected with slight nausea and uneasiness at stomach; she had a gentle moisture on her skin during the night, and her stools became more frequent and more loose. Soon after this, some stomach-complaints took place, succeeded by a tertian fever. Upon this the bismuth was omitted, and proper remedies for the fever were prescribed, by means of which she was perfectly recovered on the twenty-second day. The day following, the bismuth was repeated, and she took fifteen grains, with as much sugar, twice a-day. This, continued for some days, produced no effect but moisture on the skin. On the thirty-seventh day, the bismuth was repeated, to the extent of a scruple twice a-day, and still without any uneasiness, or any other obvious operation than slight moisture during the night. Afterwards the dose was increased to half a drachm, without inconvenience. And she took, in all, during the space of 130 days, very near eight ounces of the calx of bismuth, without any disorder of the function of digestion, or any affection of her general health.

A young woman, in a good state of health, began the use of the calx of zinc on the 5th of August 1792: she first took six grains twice a-day, and the dose was soon increased to twelve. This produced a slight nausea, and some uneasiness at stomach. On the 12th of August, the dose was augmented to fifteen grains; from which there arose considerable uneasiness at stomach, and nausea succeeded by augmented heat: but these symptoms were only of short continuance. On the 16th of August, the dose was
augmented

augmented to a scruple, with the same effects as before ; and this dose was continued till the 29th of September : by which time she had taken four ounces and an half of the flowers of zinc, without any affection of her general health ; and a large ulcer of the foot, under which she had laboured, was completely healed.

‘ A female, in the 19th year of her age, recovered from the venereal disease, was ordered six grains of the calx of zinc twice a-day. The first doses were followed by nausea, anxiety at the præcordia, heaviness at stomach, vomiting, colic-pains, and frequent loose stools. On the third day, nausea occurred without vomiting ; but she had disturbed sleep, and sweated, during the night. On the sixth day, the dose was increased to twelve grains ; from which the same symptoms as before, with vomiting, were produced ; and she complained of a metallic taste in her mouth. Soon after, however, the vomiting ceased ; and on the tenth day the dose was augmented to fifteen grains. From this she had much nausea and considerable uneasiness, but without a return of vomiting ; and her menses, which, during the syphilitic complaint, had been absent, now appeared.

As the powders had constantly sickened her, she now refused to take any more of them ; and it was therefore exhibited under the form of pills. Under this form she first took daily two scruples of the flowers of zinc, and afterwards a whole drachm, without any inconvenience, which Dr. Reil ascribed to its gradual solution. In the space of twenty-two days, she had taken upwards of an ounce and a half of this medicine, without any affection of her general health.

‘ To two young rabbits of the same litter, Dr. Reil exhibited in the morning a scruple of the flowers of zinc. From this there arose lassitude, want of appetite, a loose belly, and the loss of their usual agility ; but no vomiting. A second day, from the

same quantity, the same phenomena were produced : On the third day, from the same dose, there was a very great loss of strength : And on the fourth, death.

‘ On the dissection of one, which, before its death, had been subjected to considerable diarrhœa, the intestines were found filled with a frothy green liquor, and the stomach inflamed at different parts, especially at the pylorus. The stomach contained a small quantity of food, and that in a fluid state.

‘ In the other, which had died without diarrhœa, the stomach was filled with ingesta, although for two days before its death, it had eat nothing. On the back part of the stomach there was an eschar, about the size of a bean, similar to what a caustic could have produced, which penetrated to the exterior coat of the stomach. To this the calx of zinc, as well as some alimentary matters, adhered. In the smaller curvature of the stomach, between the cardia and pylorus, there was also an eschar, but of less size.

‘ Another rabbit, to which Dr. Reil gave fifteen grains of the calx of bismuth daily, on the third day lost all appetite. Its hair stood upright, its belly was bound, and its urine flowed profusely : it could not walk steadily, and was affected with dyspnœa. There took place also a discharge of blood from the nose ; soon after which it died. Upon dissection, Dr. Reil found the stomach distended with ingesta, and a little inflamed at the cardia. The lungs in the right-side were uncommonly red and hard, and in different places seemed to be obstructed by an exudation of the gluten of the blood.

‘ As the subject of another experiment, he took four rabbits ; to two of whom he gave daily five grains of the calx of bismuth, and to the other as much of the calx of zinc. In this gradual manner they swallowed several ounces of these articles, and seemed to enjoy good health. But at the end of some months after the experiment was begun, they all died in succession.

‘ One of the rabbits which took the calx of bismuth became very lean; some of the mesenteric glands were enlarged; and both the mesentery and omentum abounded with *Tæniæ hydatigenæ*. The stomach also appeared to be contracted between the cardia and pylorus.

‘ In the other which took the calx of bismuth, the intestines, and especially the cœcum, were stuffed with indurated bloody fœces. The intestines in different places were inflamed, and the villous coat of the stomach was marked with several black gangrenous spots. But it seemed to Dr. Reil to have died from constipation.

Upon the dissection of one of the rabbits which took the calx of zinc, there was a remarkable constriction about the middle of the stomach, and its villous coat was of a white colour; and the calx of the metal seemed to adhere to it so firmly, that it could hardly be rubbed off.

‘ In the body of the other rabbit which took the calx of zinc, nothing particular was observed, excepting that the stomach was stuffed with food.

From these and several other experiments, of which Dr. Reil has given a particular detail, he draws the following conclusions.

‘ 1. That the calces of bismuth and of zinc may be given in larger doses than has hitherto been common among physicians.

‘ 2. That notwithstanding this, it is still the duty of a prudent physician, to employ with some caution articles proving fatal to brutes, in the manner that the calces of bismuth and zinc were observed to do.

‘ 3. That the primary virtues of the bismuth and zinc depend upon their influence as irritants and restringents.

‘ 4. That from these primary virtues several other secondary effects occur; and particularly, that they act in some degree as strengthening medicines; that they absorb acids; that they augment all the secretions

tions and excretions ; that they excite vomiting, open the belly, and produce sweating ; that they possess some degree of an anthelmintic power ; and, finally, that they operate as antispasmodics.

Dr. Reil thinks, that the sedative power of these calces is to be inferred from experience alone, and not from any investigation of their constituent parts. They change, he tells us, the living solid in a manner not to be explained, and thus remove the disposition to inordinate action. They are preferable, he observes, in many cases, to other antispasmodics, as they are without either smell or taste, as they do not increase the heat of the body, and as they have a tendency to promote diaphoresis.

Dissertatio Medica de Hydrope plethorico. Auctore. CAROLO I. C. GRAPENGIESSER, M. D. Gottingen. This species of Dropsy, the author observes, is accompanied with an inflammatory disposition, and not unfrequently fever and topical inflammation attend it. In the beginning it often appears under the form of asthma, and ends in hydrothorax. It often precedes dropsey of the cellular membrane. The ascites plethoricus is a more rare disease, but is sometimes also observed.

During the whole course of this modification of dropsey, the pulse is full, hard, and strong. If, however, from a superabundance of fluids, the vessels happen to be relaxed, then the pulse, though still full, begins to be slow. The urine is scanty and lateritious ; pains are felt over the whole body, principally in the belly and loins : The face appears somewhat swelled ; there is a prostration of appetite ; and a slight cough, with scanty expectoration of mucus. Purgatives and diuretics are of no service ; nay, they even render the urine more scanty, and the swelling more tense. Blood drawn in this dropsey shews always an inflammatory crust ; and every venesection is attended with relief, the breathing becoming immediately

diately so free, that the patient can lie on his back or either side.

‘ If the common method of cure be employed, the disease often puts on a dreadful appearance. The swelling of the body increases to actual rupture ; violent pains take place, attended with burning fever and intolerable thirst. Often with the mucus a proportion of blood is expectorated ; delirium occasionally supervenes ; and the patient is sometimes suddenly cut off by convulsions or apoplexy. In general, the course of this disease, especially after the swellings manifest themselves, is terminated in a short time.’

The author likewise mentions a second species of plethoric dropfy, where the symptoms are less violent and slower in their progress, and to which he gives the epithet chronic.

‘ No other spontaneous crisis but hæmorrhage from the nose has been observed : but this has been often remarked to an excessive degree. Sometimes it has been observed to last through the greatest part of a night, so that the pulse almost totally failed, and the patient was in the greatest danger of deliquium animi. It has then been thought necessary to employ means for stopping it. But even in these cases, within the space of a few hours after the hæmorrhage, the pulse, to a wonderful degree, becomes more full, hard, and strong. Even during the hæmorrhage, the patient has had an increased discharge of urine, with great relief ; and this has continued till the whole swellings disappeared. If the hæmorrhage leaves a fever behind it, which not unfrequently happens, the health and strength of the patient are recovered in a shorter time.

‘ In the dissection of those dying of this disease, collections of water have been found over the whole body, but particularly in the cavities of the thorax and cranium. The large vessels have been found turgid, being distended with much blood. Where the disease has been of the acute kind, no inconsiderable inflammations have been observed.

‘ With

‘ With regard to the proximate cause of this disease, the author remarks, that plethora, whether real or spurious, and from whatever cause it may arise, must always disturb the equilibrium in the animal economy ; and that, by rendering the circulation laborious, it may induce dropsy. The predisposition to the acute form of this disease, he considers as arising chiefly from a robust habit of body, a good appetite, good digestion, too great sanguification, and the omission of accustomed venesection. To the chronic species, again, those are chiefly predisposed, who are of lax and spongy habits, who are advanced in life, who have a good appetite with bad digestion, and those who lead a sedentary life. Hence this disease is most frequently observed in monasteries.

‘ As exciting causes of the hydrops plethoricus acutus, he enumerates the suppression of accustomed hæmorrhages, inflammations of internal parts, the repulsion of exanthemata, obstructions to perspiration, and the sudden checking of diarrhœa.

‘ The prognosis in this disease, Dr. Grapengieffer observes, both as far as it can be deduced from the cause, or from the method of cure, is favourable : for it may be effectually removed by blood-letting and antispasmodics. Every thing, however, depends on the diagnosis : if this be obvious, we may judge favourably of the disease : hence the prognosis is less favourable in the chronic species of the hydrops plethoricus, for there the diagnosis is peculiarly difficult. But even in the most acute form, when, with the dropsy, the patient is at the same time affected with severe inflammation, the combination of these diseases is highly dangerous, especially if the plethora has been aggravated by the repulsion of exanthemata.

‘ Since universal plethora is the foundation of the proximate and efficient cause of this disease, the cure, our author thinks, must always hinge upon two indications. 1. The removal of the cause, that is, depletion of the whole body, and of the vessels distended from

from the quantity of blood circulating laboriously : 2dly. The removal of spasm arising from the exciting causes ; such as the repulsion of eruptions, suppressed perspiration, interrupted crisis, or the like.

‘ With these intentions, he points out blood-letting as the first remedy, and indeed as being almost the only thing necessary, and of itself sufficient for fully overcoming the disease. For he tells us, that in an easy and excellent way, it removes the cause of the disease and the disease itself at one and the same time ; it resolves spasm, and restores to the system the power of absorbing extravasated serum.

‘ Sometimes it is only by repeated blood-letting that the disease can be combated ; and the longer the blood-letting has been delayed, the more obstinate is the disease. Moderate blood-lettings, repeated according to circumstances, are more advantageous than very large ones : and if there be symptoms of any particular viscus being affected, especially of peripneumony, topical blood-letting is often highly useful. If blood-letting alone shall not sufficiently increase the excretion of urine, the use of gentle diuretic salts, such as crystals of tartar or nitre, in a very dilute solution, with a little of the oxymel of squills, although before they had no effect, will very much augment the discharge.

‘ Opium, the best and the safest anodyne, than which no article has more influence in allaying spasms, is often superior to every thing. If after blood-letting and refrigerants, the urine should not flow on account of spastic tension, and if the pains over the whole body should not cease, opium will often be productive of the best effects, as augmenting the former, and mitigating the latter. Even in other species of dropsy, Dr. Grapengiesser tells us, when attended with spasmodic pains of the belly, he has found the best effects from opium.

‘ In no species of dropsy, according to the author, is the free indulgence in the use of liquids, and anti-phlogistic

phlogistic regimen, more required than in the hydrops plethoricus. And he is persuaded, that all that has been said respecting the beneficial effects of acidulated drinks, copiously introduced, and of antiphlogistic regimen in certain cases of dropsy, serves to demonstrate the frequency of this modification of the disease.'

Ufus Lapidis Suilli in Lithiasi Renali. Auctore S. LILJEBLAD, M. D. Upsal. This stone derives its name from the use which has been made of it against the diseases of swine, for a very long period in Sweden. It consists of a calx united to a bituminous matter, or mountain oil, which is evident to the smell. It has been supposed particularly to furnish a very efficacious cure in cases of bloody urine, and other affections of the urinary passages in swine.

There are several varieties of this stone, found in considerable quantities in Sweden. The sort here recommended is thus characterised: *crystallinus spatiosus, nigrescens, ferrugineus, albo-lutescens*.

'The first case related is that of a man who had long laboured under calculus renalis. But, by the aid of the lapis suillus for the space of four years, he had been much relieved from the severity of the disease, and enjoyed much better health than before. But having neglected his medicine on the night between the 12th and 13th of December 1786, he became subjected to a severe return of his complaints. He passed an unquiet night, with a sense of coldness in his feet, and tension in the abdomen. After rising out of bed, and attempting to walk up stairs, he was seized with so violent a pain in his left-side that he could not stir. His abdomen became still more distended with flatulence; and he could obtain no discharge either by urine or stool. He had immediately recourse to the powder of the lapis suillus, which he took in a little milk and water. Immediately after swallowing it, a free discharge of wind took place, both by eructation and flatus, which was productive of

of considerable relief. In about a quarter of an hour, he had a discharge by the belly, with a copious evacuation of pale-coloured urine.

‘ But, notwithstanding this, the pain of his side was not relieved, but, remaining as it were fixed in the ureter, produced such torture and anxiety, that the sweat flowed in drops from his brow. In the space, therefore, of half an hour, he took a second dose of the powder; upon which the tension of his abdomen, vomiting, and spasms, suddenly ceased: soon after he had another loose stool. But the pain of his side, although its violence was somewhat abated, still continued to be distressing. The patient therefore thought it adviseable to put his body in different postures, that a free opportunity might be given for the descent of the calculus. A quarter of an hour had scarcely elapsed, till the pain of his side entirely vanished. A sense of pressure also was felt in the bladder, with some desire to evacuate urine.

‘ The patient, rejoicing at this, wished, however, to retain it for some time, that a larger quantity might be collected. But in about eight or ten minutes, the desire for evacuation being increased, he discharged from his bladder a quantity of dark-coloured grumous urine, with from fifteen to twenty calculi of different sizes. After this, all his symptoms disappeared. From this case it is inferred, that the employment of the lapis fuillus cannot prevent the collection of calculous matter in the body, but that it is highly useful in promoting the discharge of calculi from the body, and in alleviating the usual symptoms, even when most severe.

‘ The subject of the second case was a respectable man, in the fiftieth year of his age, of a corpulent habit of body. He had long been affected with lithiasis renalis, which a sedentary life and plentiful feeding had probably accelerated. After various and frequent attacks of the disease, he had recourse to the powder of the lapis fuillus, and it was attended with
immediate

immediate relief. He had indeed returns of paroxysms, but without severe symptoms. He discharged many calculi of different sizes : And he has now for several years enjoyed tolerable health by means of this remedy. He took in the beginning half a drachm of it in powder every day ; and afterwards he had recourse to it at intervals, as soon as the slightest pain in his back gave suspicion of calculus in the kidney.

‘ The third case is that of a man, in the seventy-fifth year of his age, who for the greatest part of his life had enjoyed good health : But about four years before, without any previous manifest cause, he became affected with a nephritic pain. Various remedies were exhibited to him, with very little benefit, for the space of a year. He then had recourse to the powder of the lapis suillus, and derived from it very great relief. After he had taken it for three weeks, his pains were not only mitigated, but several calculi also, about the size of barley-corns, passed from the ureters into the bladder, and were afterwards discharged from thence. The patient also found, that the pain of his abdomen, spasms, and other symptoms, were much mitigated, after the use of this remedy.

‘ At first, he took this remedy to the extent of a tea-spoonful twice a day ; and as the disease decreased, he employed it less frequently, using it only every second or third day : but upon any threatening of return, he had always recourse to a dose of it. He soon recovered better health after the use of it, and remained almost as free from disease as could be expected at his advanced age.

‘ It was remarkable, that in this case the calculi discharged before the use of the lapis suillus, were of a solid, compact, and hard consistence ; while those which were discharged sometime after it had been employed were porous and friable. From this it is with some degree of probability inferred, that the remedy has a power of somehow altering the texture of calculi
in

in the kidneys, and that it may be ranked among those remedies which have been styled Lithontriptics.

‘ Besides these, several other cases are here related, in which the powder of the lapis fuillus, employed to the extent of half a dram or so, for a dose, was found to be productive of the best effects. The Treatise is concluded with some general remarks on the cure of lithiasis renalis ; in which, after pointing out the indications which are to be fulfilled in combating the disease, 1. From the abundance of a certain acid in the body of every calculous patient, and, 2dly, From the spasmodic affections arising from a consent of nerves, which in almost every case accompany this disease, he endeavours to account for the benefit derived from the lapis fuillus, from its antacid and antispasmodic powers. The first of these he considers as depending on the calcareous earth ; and the last on the mountain oil, or bituminous matter, which it contains.

Dissertatio Medica de Angina Pectoris. Auctore ERNEST FRED. SCHMIDT, Gottingen. The author thinks the term *Angina pectoris* employed by the English physicians an improper one, and that the term of *Asthma convulsivum*, is much more appropriate, and from the supposed cause, he would add *Arthriticum*. But as the real nature of this affection is still exceedingly obscure, a denomination founded on the supposed proximate cause, is certainly far more objectionable, than a simple term expressive only of the most prominent symptom.

‘ The inspection of dead bodies has, Dr. Schmidt observes, thrown little light either on the nature or cause of this disease. Some, however, have considered morbid conditions discovered in certain cases on dissection, as causes of this affection, such as ossification of the valves of the heart, or of the carotids ; preternatural softness of the heart itself ; and collections of watery, puriform, or sebaceous matter, in the
mediastinum,

mediastinum, parenchyma of the lungs, or pericardium.

After some observations on the diagnosis, which is chiefly to be drawn from the peculiar pain of the breast, and on its proximate cause, concerning which different opinions have been entertained, but which our author, with Dr. Elsner, is disposed to ascribe to a gouty humour, he proceeds to treat of the cure. His observations on this subject are referred to two heads. First he treats of the palliative, and next of the radical cure.

In the commencement of this disease, the paroxysms in general terminate very soon of themselves, and require only the utmost tranquillity both of mind and of body. But when in the course of the disease, the paroxysm is lengthened in duration, and increased in violence, the utmost attention of the physician is necessary to prevent death during the paroxysm. In these cases, he points out three indications which the physician ought to have in view : 1st, To take off the spasm ; 2dly, To remove the causes inducing the paroxysm, if any shall continue to act ; and, 3dly, To alleviate the most dangerous symptoms which may occur.

With the first of these intentions, antispasmodics are to be employed ; and Dr. Schmidt particularly recommends musk, naphtha vitrioli, liquor anodynus Hoffmanni, dulcified spirit of nitre, extract of cicuta, hyosciamus, and belladonna. He thinks that opium should be employed only in cases of the most urgent danger, as it is on many accounts, in his opinion, contra-indicated in gout. He recommends also the magistery of bismuth, the flowers of zinc, and the spiritus salis ammoniaci anisatus.

Sometimes this disease proceeds from obvious occasional causes, which require that the palliative cure should be differently modified. When repletion of the stomach occurs from food, fordes, or bilious matter, emetics, and glysters, must be premised to antispasmodics ;

antispasmodics ; when it arises from gripes, he recommends, as carminatives, the *essentia fuliginis*, *assa foetida*, the *oleum cajaputæ*, &c. ; and, finally, when debilitating causes have preceded, such as profuse hæmorrhages, or obstinate diarrhœa, he advises a nutritious and strengthening diet, with the Peruvian bark. In obviating urgent symptoms, the practice employed must be entirely accommodated to occurrences. Thus, on threatening of apoplexy, he advises that recourse should be had to general and topical blood-letting ; and on threatenings of suffocation, when it does not proceed from the quantity of blood oppressing the lungs, he recommends irritating stimulants.

The radical cure, Dr. Schmidt observes, is in general very difficult, especially if the disease has been of long duration. It is not, however, he contends, to be considered as an incurable disease ; and he assures us, he has met with several instances of patients labouring under *angina pectoris*, who were restored to perfect health.

He considers the radical cure of *angina pectoris* as resting upon two indications : 1. That the cause of the disease should be removed, the morbid matter evacuated, and that part of the body freed upon which the acrimony has been deposited : 2. That a new metastasis of acrimony should be guarded against.

For answering the first of these indications, the removal of the causes of the disease, our attempts must be regulated by circumstances. But the most useful practices are, he thinks, those directed against spurious gout ; and thus benefit may be expected from emetics, laxatives, resolvents, and the like. For evacuating the morbid matter, he recommends, as of the greatest service, what will tend to promote a free discharge by the surface, such as a flannel-shirt next the skin, frictions of the surface, a temperate climate, the warm-bath, and different diaphoretic medicines, particularly antimonials, and the gum *guaia-cum*, in different forms. To free by a metastasis the

part of the body on which the acrimony has been deposited, he recommends the use of the pediluvium, with a proportion of mustard in the water, frictions of the feet, with volatile alkaline spirit, volatile liniment, or tincture of cantharides. He advises also the application of blisters, sinapisms, issues, and even actual cautery.

For fulfilling the second indication, it is, he tells us, necessary, that every source of acrimony should be cut off, by avoiding all violent mental emotions ; by shunning all food or drink of an acrid or acid quality ; and by the use of a mild bland diet, particularly a milk-diet ; by moderate exercise ; by issues and setons, either on the breast or other parts ; by preserving a free discharge from all the excretories ; and by removing every cause which can either disturb or suppress the secretions, or excretions from the body.

That the body, and particularly that the part which has formerly been affected, may be strengthened and defended against any return of the disease, food of easy digestion, with the plentiful use of diluents, is recommended. He advises also the employment of bitters, of chalybeate mineral waters, and, finally, of the Peruvian bark. He affirms, that benefit may also be derived from the use of the cold-bath, and from frequently washing the breast with cold water.

The other articles here reviewed have already passed under our notice. In our next number we shall proceed to the remaining part of the volume.

ARTICLE III. *Schola Medicinæ Universalis Nova, continens Historiam Medicinæ, Anatomiam, Physiologiam atque Pathologiam specialem, cum plurimis Tabulis æneis; Auctore GULIELMO ROWLEY, M. D. Universitat. Oxon. Colleg. Regal. Medic. Londin. Membro, &c. and Author of the Rational and Improved Practice of Physic, &c. In two Volumes Quarto, 600 pages. In Addition to which the Author has just published a Translation into English, of all the principal References to the Plates. 4l. 14s. 6d.—Sold by JOHN EDWARDS, No. 21, Saville-Row, and at E. NEWBERRY'S, Corner of St. Paul's Church-Yard, and Ludgate-Hill.*

THE author of the *Schola Medicinæ universalis nova* is very well known to the public by the many valuable treatises he has already published. The present extensive and interesting work, (which the author informs us he has been upwards of five and twenty years about), contains a history of medicine in general, from the earliest times down to the present, and the anatomy, physiology, and special pathology of the human body, with sixty-eight plates, very elegantly engraved by capital artists; among whom we observe the names of *Sharp, Royce, Cooke, Paillou, &c.*

We lament that the limits of our Review will not permit us to do justice to a work of this nature, and of which the execution appears to fulfil every humane intention of its author. In order, however, to give our readers as correct an idea of its contents and utility as possible, we shall confine ourselves, on the present occasion, to the many purposes it seems calculated to answer, and to an account of the most interesting parts of the history of medicine.

The author informs us that, to obviate many defects in medical education; to promote the acquisition of medical science with greater facility; to ren-

der the principles and practice of medicine less conjectural ; and to diffuse its excellent and humane benefits through all the earth ; were the exciting motives, that strenuously impelled him to write *Schola Medicinæ* in *Latin* ; the style of which, we may observe, is concise, conspicuous, and intelligible.

The principal impediments to useful medical studies appeared to him, from close inspection and much reflection, to be the multiplicity of authors, the variety of dubious systems, and the contrariety of opinions with which medicine superabounds, the free access to large libraries, which more frequently confound than instruct, by overwhelming the memory, without informing or elevating the judgment.

These considerations induced the author, early in life, to attempt the concentration of the most useful parts of knowledge, of both ancients and moderns, in *Historia* and *Schola Medicinæ* ; that medical preceptors, if disposed, might convey science with less circumlocution and seducing speculation ; and that students inclined to be satisfied with truth, separated from all fleeting and idle hypothesis, by being early and promptly initiated into the past and present states of medicine, might be enabled industriously to commence improvements wherever defects were discoverable ; and thus give a degree of perfection and stability to the healing art, unknown to our predecessors.

With these glaring difficulties in view, the author has undoubtedly succeeded in arranging the work for the purposes of instruction, in such a manner, as to render former anatomical works in a great measure unnecessary, as far as facts and just reasoning extend ; but how far medical preceptors may be inclined to attend to his advice, we cannot pretend to say. The following may tend to explain the method he has adopted. The explanation of the entire contents of a plate is compressed into one concise page of letter press placed opposite ; which, printed in a small type, is divided into columns in such a manner, as to give an exact description

description of the parts viewed, their connections, uses, &c.

In the physiological part the description and use of any part or function is placed in the first *column*; and the *scholia*, or reasoning, if any, in the *second*; so that the *nature*, *action*, *power*, and *uses* of any part or parts, during life, are readily acquired. The pathological part occupies the *third column*; in which we observe also the *extispicia*, or dissections after death. Thus, by blending in one view, the actual living functions, the reasonings resulting, and the visible defects, of all the parts of the human body, *post mortem*, a complete knowledge of the *real* causes of most diseases may be acquired.

Dr. Rowley states in his preface, that the *Schola Medicinæ* comprehends what is useful from the earliest ages to the present period, extracted from all authors ancient and modern; yet so concise, as not to bewilder the student's mind in useless inquiries; that he has candidly, and, without reserve, introduced, all that he has observed during his long study, practice, and reflection; and informs us there is a third volume, ready for the press, containing, in a new and brief manner, the whole practice of all the branches of medicine; and every modern discovery that has been determined useful by facts.

The History of Medicine,

Comprehends, in an abridged view, all the writers of consequence from the earliest ages to the present times; their opinions, and the progress which physic has made, in so many ages, towards the degree of perfection, that distinguishes the most refined modern medicine, from that of preceding times; the arrangement here employed, in our opinion, appears well calculated to impress the leading circumstances upon the mind of the reader. There are six plates in this history, executed in a beautiful style; and as the principal and most interesting parts refer to these

plates, we cannot present our reader with a more concentrated view of the whole, than by explaining them.

Plate I.

Is a representation of the most antient and curious piece of Ægyptian sculpture now remaining, known by the name of *Tabula Bemberia*, or *Isiaca*.

The figures on the left and upper side consist of Isis on her throne, in the middle ; the two figures on each side, with swelling breasts, are supposed tutelary deities, &c. The head of Isis is covered by a sacred *vitta Ægyptiaca* ; a turkey hen is expanded over head ; on its back is a calathus, from which arise the leaves of two *persea sprigs*, and two cornua, which include the circle, marked with the figure of a scarabæus, or beetle : in one hand, she holds a sceptre, with a flower of the lotus, with the seed of which, the Ægyptians made bread. There are several other figures around the throne, as those of the lion, dog, hawk, &c.

The second figure represents *Osiris* ; the third *Horus* ; and the remaining are explanatory of other less interesting passages. These were the deities who were supposed in those days to preside over medicine ; *magic schemata* were then held in great esteem, and of great efficacy and virtue in the cure of occult diseases ; for the *genii* to whom the rites and ceremonies were offered, were supposed to appear during sleep, to those who were expiated by a previous faith or disposition, and to teach them the cure of diseases.

The other five plates which follow are representations of rings, medallions, &c. from real antiques in fine preservation, which were engraved and struck on various occasions to the honour of health or medicine : on one side of most is the head of some emperor, &c. on the other side is the representation of the deities, who, it is supposed, in those ages, presided over medicine. Among these are discovered, *Isis*, *Osiris*, &c.

&c. of the Ægyptians, ; *Apollo, Æsculapius, Hygeia*, &c. &c. of the Greeks and Romans.

These researches, the author thinks, prove, that the deities of the Ægyptians were the identical gods the Greeks and Romans afterwards adored ; and observes, that although the names were different, yet, in general, their meaning corresponded in the *Coptic, Greek, and Latin*.

Plate II.

Figure 1. *Salus*, the image of Health.

The author observes that the veneration of Health, or *Salus*, was very great among the Greeks, as well as the Romans ; hence the frequent inscriptions to perpetual Health,—to public Health,—to sacred, or holy Health.—to Æsculapius and Health.

2. A sacrifice to Health.
3. ÆSCULAPIUS, sacrificing to the sun and moon.
4. *Isis*, with Mercury's golden wand or rod.
5. A Pantheon Head, not female but male, with the horn of the Arietine Jupiter Ammon ; the calathus, or sacred cup, intimates Serapis ; the trident, Neptune ; the serpent, Æsculapius, &c.
6. *Isis* joined to Serapis and Osiris.
7. A golden ring, with Serapis.
8. A ring with the healthful goddesses.
9. A sacrifice to the god of phyfic by the Pergamenians.
10. Serapis, worshipped by the Rhodians.
11. Serapis, adored at Rhodes.
12. The people at Cos (where Hippocrates flourished) adoring Æsculapius, Diana, &c.
13. Minerva and Æsculapius.
14. In coins familiar to Alcilia, the head of Health ; and the image expresses Sicknefs or Ill-Health, administering the serpent, the symbol of Æsculapius, as a remedy, with much devotion, from that beautiful figure.

Plate III.

Figure 1. Æsculapius carried to Rome, and a *theusa*,

or divine rites, decreed by Cæsar. A serpent is seen placed on the altar.

2. Represents Telesphorus who is also called Evermerion, to whom the Pergamenians sacrificed.
3. Adrian.
4. Avis, found under Adrian.
- 5 and 6. The Ægyptians and Pergamenians wish every sort of Health to Pius.
- 7 and 8. Serapis.
9. Marc. Aurelius. This coin signed in the tenth year, exhibits Isis winding in the form of a serpent. The Serpent is the genius of Health.
10. The Numidians implore health to Marcus Aurelius.

Plate IV.

Figure. 1. Commodus and Æsculapius. Æsculapius, the most noted deity of the Pergamenians, without doubt vigilated for the common welfare.

2. Health of the human mind.
3. Serapis conservator, or preserver.
4. Serapis and Isis.
5. Julianus Serapis and Hermanubis.
- 6 Severus with a Serpent. Æsculapius is known under Adrianople.
7. Albinus and Minerva.
8. Albinus and Salus, or health.
9. Caracalla and Geta, commend their health to the Pergamenian Æsculapius.
10. Macrius and Salus. Public vows.

Plate V.

Figure. 1. Eliogabulus and Serapis

2. Gordianus and Serapis &c.
3. Hostilianus. Serapis in a temple.
4. Gallus. Serapis in a temple. This money was struck by the people of Antioch, as may be seen, under the reign of Hostilianus, &c.
5. Gallus and Serapis.

6. Gal-

6. Gallus to the Salutiferous Apollo.
7. Volusianus. In this coin *Salus* expresses the pestiferous lues, or plague.
8. Apollo preserver.
9. Galienus, Isis and Nemesis. A coin struck by the people of Smyrna.
10. Galienus with Bacchus and Æsculapius according to some writers, but it is the author's opinion they represent Æsculapius and Hygeia.

Plate VI.

Figure 1. Galienus with Æsculapius. It is said, that under the Emperor Galienus at Rome, and in the cities of Achaia, five millions of men died in one day of a plague, and that Æsculapius was then of great assistance; hence the Sidetes stamped the impresson of him on their coin.

2. Quietus with Apollo the conservator.
3. Probus and Salus.
4. Diocletianus with Isis. Here the author makes some observations to prove that the Isis of the Egyptians was the same with the Ceres of the Greeks.
5. Isis with Horus. The author asserts that the Greeks when they speak of Horus, always interpret him as Apollo, and brings the following quotations forward from Herodotus in proof of it. Ωρονιον Οσιριος παῖδα τον Ἀπολλωνα Ἕλληνες ονομαζουσι. Horus, the son of Osiris, whom the Greeks call Apollo. And Αιγυπτισι δε Απολλον μεν Ωρος. And Apollo is also, in the Ægyptian, called Horus.
6. Isis.
7. Apis embalmed according to the manner of the Egyptians, as may be seen in many real antique mummies that have reached our time.
8. Osiris, or the author of health.

These plates shew the priestcraft and credulity of the Egyptians, Greeks and Romans, with the dignity of their Medical deities, whom they revered with much fear, and hope.

The author continues his history of medicine in a very concise but perspicuous manner, from those superstitious times, down to the present; and then gives a *Chronological Table*, in a short view, by columns, exhibiting the period when the principal physicians, &c. flourished; beginning from the supposed commencement of the world, to the Peloponnesian war; from that time to Justinian; and from thence, to the present time.

[*To be continued.*]

ART. IV. *A Practical Treatise on Fever, contrasting a Tonic Treatment with the Antiphlogistic, in which the superiority of the former is ascertained.*
By THOMAS PARKER, Surgeon at Woburn. Octavo, 92 pages, price 2s. London, JOHNSON, 1796.

THE great frequency and importance of the disease here treated of, have excited the attention of innumerable writers, who have laboured to investigate its nature, and to discover a rational, and successful method of treatment. After all, however, that has been done on this interesting subject, much obscurity remains: nor are practitioners at all agreed, either in points of theory, or of practice.

The mode of practice which the author strenuously recommends to the attention of others, he has himself experienced the good effects of, in a great variety of cases. The first principle he sets out with is, that Fever is a disease of greater simplicity than has been generally taught; that its modifications, which are comparatively few, do not alter its essence; and that

one

one and the same practice, with at least but little variation, is applicable in all cases.

Having given a description of the appearances which take place in fever, the author makes a few observations on its theory, or supposed proximate cause. He thinks, that the sudden diminution of the powers of the body in Fever depends upon a diminished energy of the brain; besides which, there is present, some other morbid condition which may be called irritability, or irregular excitement.

After remarking on the inutility of the common antiphlogistic Treatment, and particularly on the difference of the antimonial tribe of medicines, Mr. Parker proceeds to lay down his own mode of practice, which consists in the employment of the Cinchona and wine.

‘ When I first began the use of the Cinchona, I had my doubts as to the propriety of employing it. I well knew that it protracted the hot stage of intermittents when given in it, and that in hectic fever it was extremely hurtful. Yet this kind of reasoning did not absolutely convince me, that it might not be employed with advantage in continued fevers, particularly where there was considerable debility. A circumstance happened where I had a good opportunity of putting it to the test. At a village near Woburn (Fenny Stratford) a poor woman was ill with a low Fever, in which the skin was very hot, the pulse quick, the tongue very much parched, her urine high coloured, and she was at times very delirious. This poor woman at length recovered, under the use of antimonial and saline medicines. Soon after one of her daughters fell ill, and her husband also, both of whom died in about 48 hours from the attack, under the same treatment as the mother. Another son and daughter fell ill of the same Fever, and likewise a poor family near to them, in which were ill the mother and six children. Here I changed, for the first time, my practice, from antimonials and saline medicines

medicines to Cinchona and wine. Although most of these were very delirious, notwithstanding that all of them had remarkably threatening symptoms, yet not one of them died.

‘ Soon after the nurse and two other paupers in the village were sick of the same Fever, and both of them recovered. The father of the six children afterwards fell ill; he was a very irregular liver, and I was not sent for till the case was apparently a lost one; he died soon after I saw him. All of these patients took plentifully of Cinchona and Red Port; the former was given in substance.

‘ I had now in a manner made up my mind, as to the superior efficacy of Cinchona and wine in bad Fevers; since which I have tried them together in a great number of cases, perhaps in more than would be readily credited; and I am confirmed in my opinion of the superiority that Cinchona and Port possess over every other remedy hitherto prescribed.

Some Directions to be Observed in the Management of Cinchona and Wine in Fevers, and their Operation.

‘ I have long seen that the prostration of strength in Fever, and the watchfulness, were very formidable symptoms; and upon turning the subject over in my thoughts almost times out of number, it always appeared to me, that these symptoms took their rise from some morbid condition of the brain, which I have before endeavoured to explain. From a close and frequent investigation of Fever, I was led to think, that inflammation had no share in producing these symptoms; because were that allowed, the lancet would quickly relieve the patient, which with me it has never in any degree done, and often done mischief by increasing the debility.

‘ On the other hand, stimulants—as camphor, the volatile salts, with musk and serpentaria, are very
inefficacious;

inefficacious medicines, to say no worse of them. With me at least they have been invariably so.

‘ A medicine is wanting which can give powers to the constitution ; powers which shall be permanent. In intermittents Cinchona has this effect in a remarkable degree, warding off the Fever perhaps by giving strength to the body ; but in intermittents there is for a time an entire cessation of Fever ; and then the Cinchona, it is well known, may be administered with safety, and in abundance. In continued Fever this is not the case ; and he who waits for what is called remission, in which state Cinchona has been recommended, will be obliged entirely to withhold it. It is true that in continued Fevers the pulse is not so frequent at some times as at others ; for example, if the pulse should beat 110 in the minute at night, it will the next morning probably beat not more than 100, or 102 ; but no person who knows any thing of practice will call this a remission. He then, who wishes to give the Cinchona in continued Fevers, must not regard these worse than trifling distinctions. On the contrary, he must give it with boldness and with firmness, and that too in proportion to the quickness of pulse, and to the other symptoms of danger.

‘ If from fear, or from a persuasion that it will be injurious while the pulse is so frequent, he shall forbear to give it, he will find to his sorrow that he has not only lost time, but that every hour brings more formidable symptoms before him.

‘ The annexed cases will in some measure show not the advantage only, but the necessity of giving both the Cinchona and wine in large doses, and of repeating them frequently.

‘ The state of the stomach is often so irritable, that it will not bear the Cinchona in substance ; of this I have seen many instances : this is a very unfavourable circumstance, inasmuch as the remedy must be given in small, and therefore often, in insufficient doses. When this is the case, the decoction must be given ;
and

and so unsettled is the stomach sometimes, that it is necessary to give with it pure kali, saturated with lemon-juice. It is evident, that, in order that the medicine may produce any good here, it should be repeated at short intervals, every second hour for example ; and as the stomach recovers its tone, the decoction may be made stronger. I have often given the vitriolic acid with Cinchona, and in some cases I have thought the stomach received it better ; but my principal reason was to increase the tonic powers of the Cinchona.

‘ The intestines do not always receive the Cinchona well : it now and then renders them lax. This is a very distressing effect, because the medicine is carried off hastily, and because it is difficult, when this effect takes place, to retain it there for a sufficient time, to operate with advantage.

‘ I have generally found, that some tincture of cinnamon and catechu have prevented this. I have never been obliged to try opium with this view ; though I would do so, much as I dislike it in Fever, rather than withdraw the Cinchona. A good way of giving the Cinchona is to mix it with the arabic emulsion of the old dispensatory ; this renders the medicine more palatable, and prevents in a great measure the operation I am complaining of. Red port, if it be old and sound, gives tone to the bowels, and is moreover a most powerful and most valuable remedy in Fever ; so much so, that in a bad Fever I had rather have it for my practice, than all the medicines that we are yet acquainted with, without it. I have, in many cases of Fever, where the debility was considerable, tried it alone, and it has succeeded very well ; in other cases I found it ineffectual by itself, but it proved effectual when the Cinchona was given with it.

‘ The best way of giving port is in small quantities, and repeating it often. This must be regulated by the degree of debility, dejection of countenance, and watchfulness, and by the patient’s habits when in health..

health. A person who has drunk too freely of wine in health, requires abundance in sickness ; and after all, such a person is, for obvious reasons, exposed to more than common danger in Fever. I generally give my patients wine at stated times, and with as much punctuality as I would medicine : half a wine-glassful, for example, every half hour, hour, or second hour, or if circumstances require it, a wine-glassful at the same times.

‘ I never knew it in any case, which has often surprised me, produce any thing like ebriety ; it refreshes the patient, and for the most part composes him ; it renders, like the Cinchona, the pulse less frequent and more steady, and brings every thing, as it were, back to its natural action.

‘ In my zeal, it is possible I may overrate the value of this treatment : me, I confess, it strikes, as one of the greatest acquisitions to medical practice that I am acquainted with ; and with this impression it is no wonder that I should express myself in terms not quite moderate.

‘ I pretend not to say, efficacious as it is, that it is a remedy in all cases of Fever. This would be to deceive greatly ; and no man who has seen much of practice, and of the failure which sometimes attends our best remedies in other diseases, would give me credit.

‘ The regimen, I think, should be nutritious. As Fever is a very exhausting disease, this appears to me indispensably necessary. The patient may drink of barley water, which should not be thin, and of good broth, of milk porridge, if milk previously to the Fever agreed with the patient ; to which may be added, panada, tapioca, or sago ; though it is very seldom that patients will be prevailed upon to take much of either of them ; and provided wine can be taken in sufficient quantity, they may be dispensed with.

I in-

‘ I intimated that a moisture upon the skin is desirable, and chiefly because in this state the Cinchona universally agrees, and is always beneficial; but since it is little in our power to bring this about, and since in bad fevers not an hour should be trifled away, we must proceed to the use of it, even though the skin should be dry and hot. An example of this is given in the annexed cases; and it is a practice which I never hesitate to adopt where danger is present. It may be thought needless, and I wish it were, to observe that great care be taken that the Cinchona and wine be the best that can be procured.

‘ I do not know that I have any farther observations to make, except that the patient should be kept very quiet, in order to dispose him to sleep, and that for this reason the room should be rather dark: he should be kept very clean; and if the weather be at all damp or cold, there should be a fire in his room; and, above all, the practitioner should visit his patient often, not only to watch his symptoms, but to see that the nurse executes her part well.’

In confirmation of his plan, the author relates several cases, one of which we shall transcribe.—

‘ Mr. — of Woburn, a middle-aged man, and of full habit, had been ill with Fever for three or four days before I saw him. He had taken pulvis Jacobi, which made him very sick, and he had taken also an aperient. I found his face exceedingly flushed, and apparently swollen, similar to what is seen when a person is much overheated by exercise. His tongue was very white, having upon it an appearance like what takes place in a ptyalism; his breathing was very laborious, and his pulse from 100 to 112 in the minute, strong and full; he complained of an acute pain in his head, and great restlessness; his skin hot and dry.

‘ In this state, which seemed so much to indicate bleeding, I bled him, taking from him about ten ounces, which, upon standing, seemed to separate
into

into coagulating lymph and serum, principally the former. There were but few of the red particles. I gave him the pure ammonia, saturated with lemon-juice, adding to it the decoction of Cinchona; and a table-spoonful of wine, every second hour. The next morning I found the symptoms not varied in the least; he had not slept in the night more than an hour, and that sleep was greatly disturbed, and did not in the least refresh him. As there continued the same fulness about the head, I directed leeches to be freely applied to the temples, and behind the ears, and the medicine to be repeated; his thirst, which was very urgent, was supplied with barley-water. I applied a blister to each temple, and behind each ear; these rendered him more restless, and brought on vast uneasiness about the region of the bladder. His symptoms continued very evidently to grow worse, and the treatment was therefore varied; he had an enema, which, though it produced only two evacuations, reduced him exceedingly. The next morning he took a gentle emetic, which sank him prodigiously. He was at this time sighing incessantly, was so feeble, that when he sank down low in the bed, he had not power to raise himself, and his extremities were very cold: his pulse was exceedingly hurried, and the tendons about the wrist very much disturbed. In this state of things there was confessedly much difficulty in knowing how to act. With a habit so full, with a countenance yet flushed, indicating fulness of the vessels, and a determination to the head, it might be thought a hasty, if not an injudicious practice, to give Cinchona and wine; yet if it be considered, that these appearances are often very delusive and fallacious; that abundance of blood, and strength, are not synonymous, but are really two distinct, and sometimes opposite things; and when it is farther considered, that in the present case bleeding had not relieved, and that I was now driven to such a state, that the case must, humanly speaking, terminate in

death, unless some powerful remedy could be devised; I thought it tolerably clear what measures to take; namely, if it were possible, to raise the constitution gradually from this state of exhaustion, and extreme debility, to a more secure state. With this view, I gave from two scruples to a drachm of the powder of Cinchona, every second hour, in almond emulsion, and a glass of red wine, (eleven of which fill the common quart bottle) every half hour. A little spirit of cinnamon was added to the draught, in order to prevent its disordering the stomach and bowels. The medicine and wine were both given with the utmost punctuality: and before he had taken a bottle of wine, he was clearly better; his countenance was more chearful, his pulse more steady, and the tendons more quiet. I desired him to persist boldly in the method; by which means his symptoms gradually gave way. The wine threw him into a sleep, which it frequently does, and the sleep procured from it in Fevers is always quiet and refreshing, never producing any sensation like ebriety. I shall not comment upon this singular and very alarming case; the event of it will not be soon erased from my mind.'

The differences which exist among practitioners, respecting the treatment of Fevers, is matter of very serious consideration. A very close attention is wanting, not only to the effects of remedies, of this or that description; but more especially to the undisturbed powers of the constitution. If these were more accurately observed, and reflected on, we cannot but think, that much of the apparent contrariety in the facts would vanish, and the causes of the discrepancy of opinions be at length detected.

ART. V. *Surgical and Physiological Essays. Part 3.* By JOHN ABERNETHY, *Assistant Surgeon to St. Bartholomew's Hospital, and Lecturer in Anatomy and Surgery.* Octavo, 208 pages, price 3s. 6d. Boards. CADELL and DAVIES. London. 1797.

THE first Essay in this collection is on the important subject of Injuries of the Head ; and its chief object is, to inculcate a less frequent performance of the operation of the trepan, than has been hitherto the case. Several respectable writers, particularly M. Default of Paris, Mr. Dease of Dublin, and Mr. John Bell of Edinburgh, have of late supposed that former practitioners recommended the use of the Trephine in many cases that did not require it, or that would have done equally well if it had not been had recourse to. The difference, however, is far from being settled, and many material points require still further investigation.

Many cases, the author observes, have occurred of late, where, even in fractures with depression, the patients have done well without an operation. Five of this description are here related, which occurred at St. Bartholomew's Hospital, in the space of twelve months. Instead of detailing cases, we shall confine our attention to the remarks subjoined.

It appears clearly, Mr. Abernethy observes, that a slight degree of pressure does not derange the functions of the brain ; as persons are often perfectly sensible, and free from head-ach and giddiness immediately after the injury. Severe illness indeed often intervenes between the receipt of the injury, and the time of its recovery ; and this might be referred to pressure ; but it equally occurs when the depressed portion is elevated. The degree of pressure which the brain can sustain without great injury to the system, probably may vary according to the disposition of that organ to be affected by it, the suddenness of its application,

plication, and the direction in which it is made. The first of these circumstances seems evident ; for in some persons, a slight pressure produces severe symptoms, whilst in others, a much greater degree is borne without inconvenience. Where a compressing cause does not, in the first instance, occasion bad effects, if inflammation of the brain ensues, it seems then to act injuriously ; which probably arises from the increased susceptibility of the brain. We can rarely judge of the effects of pressure when any part of the cranium is beaten in by a blow ; for in that case the shock generally occasions stupefaction. Internal hæmorrhages, perhaps, afford us the best criterion whereby to determine the effects of pressure on the brain. In one of the cases here related it appears, that a considerable hæmorrhage must have taken place before it deprived the patient of his faculties ; for he walked home, undressed himself, and went to bed, after the trunk of the middle artery of the dura mater had been ruptured. In cases of apoplexy also, the hæmorrhage is generally very large before it produces those consequences which destroy life.

Though a slight degree of pressure does not immediately affect the functions of the brain, yet it may act in another way,—it may excite inflammation of that organ, as it does of other parts of the body. Its power in this respect, however, will probably lessen by the part becoming accustomed to it, and hence a reason is afforded against an indiscriminate application of the trephine in cases of slight depression.

The author, therefore, is disposed to join in opinion with those surgeons who are against trephining in slight depressions of the skull, or small extravasations on the dura mater. In the latter, it is probable, he observes, that the compressing cause will soon be removed by absorption ; and, in the former, the bone will regain its natural level if the subject be young. In adults, however, and especially in persons of advanced life, this cannot be expected ; so that in them
the

the accommodation of the parts to each other, necessary for preventing future mischief, must be effected by a corresponding diminution of the brain.

There are, however, Mr. Abernethy acknowledges, degrees of depression that it would be highly imprudent to treat in this manner. But whenever the patient retains his senses perfectly, he thinks it improper to trephine him, unless symptoms arise that indicate the necessity of it.

The second section treats of injuries attended with extravasations of blood upon the dura mater. Three cases are here related where the skull was broken and depressed at that part which covers the middle artery of the dura mater, (to wit, the anterior and inferior angle of the parietal bone) by which means that vessel was lacerated. The great quantity of blood usually effused where this accident happens, renders it desirable to have recourse, as early as possible to the trephine.

There are circumstances, the author thinks, which tend to point out when blood is effused immediately beneath the bone, between it and the dura mater. If there be so much blood on the dura mater as materially to derange the functions of the brain, the bone, to a certain extent, will no longer receive blood from within ; and, by the operation performed for its exposure, the pericranium must have been separated from its outside. A bone so circumstanced, the author thinks, will not be found to bleed, at least not with the same freedom and celerity as it does when the dura mater remains connected with it internally. He has twice been able, by attending to the want of hæmorrhage from the outside of the cranium, to ascertain the extent to which the dura mater was detached within ; and, very frequently, when symptoms appeared to demand a perforation of the skull, he has seen it contra-indicated by the hæmorrhage from the bone, and, as the event has proved, rightly.

Section 3. Cases of Fungus, or Hernia Cerebri. Mr. Abernethy's opinion of the nature of these tumours is peculiar, we believe, to himself. He supposes, that, in consequence of the brain being injured to some depth beneath the surface, disease of the vessels, and consequent effusion of blood, ensues; that the effusion is for a time restrained by the superincumbent brain and its membranes; but these gradually yielding to the expansive force exerted from within, and at last, giving way altogether, the fluid blood oozes out and congeals upon the surface of the tumour.

In the treatment of these tumours, pressure is especially to be avoided. If the tumour does not drop off itself, but becomes troublesome from its bulk, it may be occasionally pared with a knife. But if symptoms of irritation and pressure on the brain take place, a rational mode of relief appears to be, that of enlarging the opening in the bone in proportion to the extent and increase of the tumour.

Section 4. Concussion of the Brain. The effects of concussion, the author thinks, may generally be distinguished from those of compression. The insensibility, he says, is much less in concussion, especially after a short time has elapsed. Patients, in this case, though they seem reluctant to answer questions, yet complain much if their heads are moved. The pupils also are usually more contracted than in compression of the brain, the muscles of the limbs retain their natural state of tone, and respiration is performed with little or no stertor, though the pulse generally intermits in a very considerable degree. In the slighter cases of concussion, the sickness of the patient is often very great.

But in cases of Compression of the Brain, circumstances, very much the reverse of those above related take place.

The opinions that prevail amongst surgeons, respecting the treatment of concussion, are very different,

ferent; many late writers advise stimulating cordials, such as wine and volatile alkali; while others pursue a directly opposite conduct. But stimulants are likely, to aggravate that inflammation, which, in these cases the author remarks, must sooner or later ensue. On the contrary, surgical books abound with cases in which suitable evacuations have been freely employed in concussion with the best effects. While the advocates for a contrary practice, he remarks, have rested their arguments upon vague theory, and communicate no particulars of their success*.

Section 5. On Inflammation of the Pia Mater.
The remarks on this head contain nothing new.

The subject is concluded by some cases of disease of the Bone and Dura Mater.

‘Suppuration of the diploë,’ the author observes, and the death of a portion of the bone, are the common effects of the injury done to the cranium; and such a morbid state may indeed occur at some distance of time from the receipt of the injury. But the disease which the cases represent, generally arises without an obvious cause. An affection of the dura mater is almost the necessary consequence of such a disease in the bone. In syphilis it probably takes place later than in any other instance; for that disorder attacks the outside of the skull, which it gradually destroys; the inner table and the dura mater remain sound till the last. But when, as in the complaint I am now considering, the whole bone is involved in disease, we can no more expect that the dura mater should remain unaffected within, than that the pericranium should continue sound and attached without; for that membrane may be regarded as the periosteum to the internal table of the skull. It is well known that, in general, the dura mater separates, and becomes thickened from a deposition and

* We believe the author here to be incorrect.—Mr. Bromfield and others have adduced instances of the successful use of stimulants in Concussion of the Brain.—This matter must yet remain *sub judice*.

subsequent organization of coagulable lymph between its layers. This thickening is sometimes considerable, so as to form a tumour which causes an indentation in the cerebrum ; as happened in a very remarkable degree in the case of the *Sieur le Gallois*, related by *M. Louis*. Sometimes the *dura mater* secretes pus, which being confined within the cranium, produces inflammation of the brain, &c. At others, granulations arise from the irritated membrane, and, making their way through the bone, form those tumours so well described in the *Memoir* just referred to. This took place in one of the cases I have related ; and is a remarkable instance of the power which granulations possess of removing bone. The disease, however, does not confine itself to the part first attacked ; for if the irritated state of the *dura mater* be not appeased, thickenings will take place in other parts of that membrane ; or the inflammation becoming more extended, suppuration may be produced even over the opposite hemisphere of the brain, as happened in both the cases which I have related.'

Although exfoliation of the bone will sometimes take place in these cases spontaneously, yet a removal of the dead portion by art, should in general be had recourse to ; especially if symptoms denoting general irritation of the *Dura Mater* take place,

The next division of this performance contains a supplement to the *Essay on the Lumbar Abscess*. Of this *Essay* we have before given a full account*. The present contains a relation of twelve cases of this affection. The results will appear from the remarks subjoined.

' When I first began to open lumbar abscesses in the method I have recommended in this and my former *Essay* on the subject, I was extremely solicitous to do it in such a manner that the inner part of

* Vide *Medical and Chirurgical Review*, vol. I. page 1.

the aperture might act like a valve, to prevent any matter from oozing out, so as to keep the orifice open. I have found, however, that great care in this respect was not necessary. I now make the opening with little obliquity, and by using a broad abscess lancet, the wound is generally sufficient to give a discharge to those coagula which are so frequently found in the matter. I always completely empty the abscess, and then bring the lips of the orifice together by means of lint and sticking-plaster, as after the operation of phlebotomy; and over these a compress and bandage are applied. I dress the wounds every second day, and of late have found little difficulty in healing them, though many of them granulate before they completely unite. The only troublesome circumstance that has lately occurred to me, has been an enlargement of the lymphatic glands on the front of the thigh, at the place where the abscess has been opened.

‘ I should not have been so particular in describing what may, to some appear unnecessary minutiae, had I not known instances where this mode of treatment was completely frustrated from want of attention to them.—With regard to the time of repeating the operation, it must be regulated entirely by the circumstances of the case; the matter collecting much faster in some persons than in others. It is best, I think, to wait until the integuments are sufficiently elevated to allow of a puncture being made in them without any hazard of wounding the parts underneath. Many patients bear even the first discharges without any loss of strength, notwithstanding the quantity of matter evacuated is very considerable; and almost all that I have seen, improve in health under the subsequent ones. The great disturbance that ensues, when, either by accident or design, a permanent opening is made in a lumbar abscess, should render surgeons extremely anxious to avoid such an occurrence altogether, if possible, or, at least, to delay it for a considerable time; and although the danger

ger and the sufferings of the patient, when the abscess is opened, will be much greater where there is disease of the vertebræ; yet as we had an opportunity of observing in the third case, this caution cannot be disregarded with safety, even when there is no reason to suspect any morbid condition of the spine.

‘ The great benefit derived from occasional emetics and electricity, encourages me to hope that many of these abscesses may be dispersed without any permanent exposure of their cavity, and that thus the patient may escape the sufferings and hazard to which such an operation necessarily exposes him.

‘ Where the vertebræ are sound, the disturbance excited by opening the abscess will in general subside gradually, and the wound will at last become indolent; in which state it may remain for a considerable time before it entirely heals, but without affecting the patient’s constitution. Perfect quietude seems indispensably necessary in the irritable state of this disorder. I have thought issues very useful in some cases; but in others I could not perceive much advantage derived from them. A solution of opium injected, in one case, seemed beneficial, though it did not ascend above Poupart’s ligament. From reflecting that the state of the constitution follows, and corresponds with, that of the abscess, I am strongly inclined to believe, that injections may be useful, in preventing the cyst, when it has become open, from acquiring that morbid condition which induces the hectic fever. In the records of former practice, we read of many extensive abscesses, into which irritating injections were daily thrown. According to the ideas which now prevail among surgeons, the additional irritation excited by these, would be supposed to create great mischief; yet, we are told that these patients recovered perfectly, and perhaps for the very reason I have suggested, viz. because the abscess was prevented from falling into the peculiar morbid state which induces hectic fever.

‘ The

‘ The injecting the cavity of a lumbar abscess cannot, I believe, be effected, unless a flexible pipe, such as a hollow bougie, could be introduced into it from beneath Poupart’s ligament; when the injection might be thrown in, and applied to the whole surface of the cyst. In general, however, it would require a new opening to be made through the skin and fascia below Poupart’s ligament, in order to effect the easy introduction of such a canula.

‘ I have very little to observe respecting the medical treatment of these diseases. I ought, however, to mention, that I thought the administration of opium, at regular intervals, and in doses proportioned to the cause which required it, was very useful in mitigating the pain and irritability of the abscess, and in consequence the corresponding hectic fever. Although later experience has shewn me, that lumbar abscess and diseased vertebræ are more frequently connected with each other than at first I supposed, still I think it probable that they are much less so than was formerly believed. It is, perhaps, a curious circumstance, that, in the first eight cases of which I gave an account, there was no reason to suppose any disease of the spine existed. In the present twelve cases which I have related, the three patients who died, perished from the extraordinary degree of the disease in the bone. One woman, whose abscess was dispersed by electricity, has, in my opinion, a disease of the spine, and may, on that account, be liable to a return of the complaint. All the other cases, where the disease was unconnected with carious vertebræ, did well, although in some of them the abscess was large, and the health much impaired by its formation.’

This Essay is concluded by the relation of a case of Spina Bifida, which was treated in the manner above recommended for the Lumbar Abscess. The tumour was punctured every fourth day for six weeks, during which time the child’s health continued unaffected. No contraction, however, of the integuments took place;

place ; and at this time, one of the punctures did not heal, but permitted the fluid to ooze out. The discharge gradually changed from a limpid to a puriform appearance, and in a few days the child died. This case is interesting, though unsuccessful ; as it shews, that the attempt at a cure may at least be made without hazard.

The next Essay consists of experiments on Irritability, for the purpose of determining the effects of oxygen on the irritable fibre. In the first experiment the different limbs of the same frog, deprived of the skin, were exposed to pure oxygen air, and to atmospheric air. After five hours, the muscles had nearly ceased to act in both limbs ; those, however, of the thigh belonging to the limb enclosed in atmospheric air, acted more vividly than the others. The muscles exposed to the oxygenous gas were afterwards found to be most flabby. Several other trials were made with a similar result ; whence it is concluded, that oxygenous gas has no greater power of supporting the irritability of parts *separated* from an animal, than the common atmosphere.

Experiment 2. Limbs prepared in the same manner, were exposed to azotic and to hydrogen gas. The limb which was kept in the former for two hours and a half, was incapable of being any longer excited ; but that in the hydrogen gas acted faintly after being kept nearly four hours in it.

Experiment 3. In carbonic and in nitrous gas, both limbs ceased to act in an hour and a half.

Experiment 4. One limb was immersed in carbonated hydrogen gas, and ceased to contract in an hour and a half. The other limb was immersed in water, from whence, after an hour and a quarter, it was taken out stiff and without action : but on softening the rigid muscles by warmth and moisture, and afterwards exposing the limb to the air, perceptible contractions were again excited.

Experiment

Experiment 5. A limb contained in an exhausted receiver, continued to contract as long (22 hours) as one exposed to atmospheric air. The same took place when the limb was excited in azotic, hydrogenous, and other gasses; which tends to shew, that the cause of irritability does not depend upon oxygene for its power of action.

‘ These experiments,’ the author thinks, ‘ shew the impropriety of a term now commonly employed, by some perhaps metaphorically, but which many receive in a literal sense, I mean, the exhaustment of irritability during the contraction of the muscles: surely, if it was exhausted, it could not be so completely renewed as to continue to produce vivid contractions for a long time under such a variety of circumstances.

‘ The event of these experiments, however, imparts no new information; it only tells us what we knew before,—that azotic, carbonic, and hydrogenous gasses are, in different degrees, injurious to life; and that oxygene gas, by itself, is not more beneficial than common air. The experiments shewing the long continuance of life and action in muscles placed under an exhausted receiver, are, however, worthy of notice; as they seem to prove, that the cause of irritability, when once it has been formed, does not require the assistance of external matter for the performance of its functions; and that it is less susceptible of change in this situation, than when exposed to the influence of the different gasses, which perhaps impair its vigour, or conduct it away from the animal fibre.

‘ That the decomposition of oxygenous gas in the living body is the great source of animal heat, seems now to be fully proved; but how far it contributes to the production of irritability or of the living principle, we are not at present perhaps competent to determine. If the phænomena of irritability, like those of electricity or magnetism, should depend upon a subtile matter connected with another of a grosser nature, we have no more reason to suppose that it consists of
oxygene,

oxygen, than of any other chemical substance. I am far from meaning to deny the great utility of oxygen in the functions of the animal body ; but I think its importance has been over-rated.—I infer that it is not essential to vitality, because different tribes of animals partake of it in very different degrees, and those which have least of it are by no means the least vivacious. In warm-blooded animals, the air-cells of the lungs are very numerous and small, and the colouring matter of the blood exists in great quantity ; so that a strong attraction of oxygen takes place from a surface of immense extent. In the amphibia, the surface is less from the great size of the air-cells ; and there is less of the attracting matter. In fishes there is still less oxygen applied to the gills, and still less attraction for it in the blood*. The consequence is what we might naturally expect,—a less production of heat in those animals which are the least capable of acquiring oxygen gas. There is, however, no corresponding decrease, but, on the contrary, an aug-

* ‘ That oxygenous gas combines with the blood, and imparts to it a scarlet colour, was, I think, sufficiently proved by the experiments of Doctor Priestley ; but as this is a circumstance still doubted by many, I beg leave to relate an experiment which I made, in order to examine this subject still more fully.—I took the coagulum of venal blood left in a basin after bleeding, and turning it bottom upwards, waited till its surface had become of a scarlet colour : I then took slices of this surface, and similar slices of the interior part of the coagulum, which had a very dark appearance, and exposed them repeatedly to azotic and nitrous gases. The scarlet colour gradually faded upon such exposure, and the azotic gas being afterwards examined, was found to contain oxygenous gas, while the nitrous gas was much diminished, doubtless by combining with the same principle. The gases to which the dark-coloured blood was exposed, underwent no change in this experiment. That blood takes oxygenous gas from the air when it becomes florid, will not, I suppose, be denied ; and the experiment I have related, shews that it will again part with it, though slowly, without any alteration in its temperature. When I exposed the serum of the blood to azotic gas, I did not find any oxygenous gas was given out by it ; and this, as well as other reasons, have led me to entertain the opinion, that one great use of the colouring matter of the blood is, to readily combine and part with oxygenous gas.’

mentation

mentation of vitality.—Again, if we reflect on the life of hydatids in closed sacs, of animalcules in the feminal vesicles, liver, gall-bladder, &c. and the length of time that many insects will continue to live, even when immersed in spirits, I think we must confess, that the presence of oxygene gas does not appear so essential to animal life, as many persons have of late supposed.

The last Section is entitled *Surgical Cases and Remarks*. Two cases of Aneurism are first related, in which the artery was tied above the tumour as recommended by Mr. Hunter. The failure in this operation appears to have been of two kinds; first, that which arose from the inflammation and ulceration of the artery; and secondly, that which proceeded from want of union between the sides of the vessel. For remedying the first inconvenience, Mr. Abernethy recommends that two ligatures be used, applying one of them as high up, and the other as low down, as the operator can, so as to inclose the artery at those parts where it is surrounded by, and remains attached to, its natural connexions. The artery is then to be divided between the two ligatures: thus tension is prevented, and the artery retracting, becomes in the same circumstances as when tied upon the surface of a stump after amputation. In one of the cases here related, it was found, that much pain and throbbing of the artery, which occur in the common mode, were avoided.—With respect to the want of union in the sides, the author suggests no remedy; it depending, probably, on a diseased state of the vessel, over which we have no power.

One of these cases is remarkable in having the artery tied as high up, as an inch and a half above Poupart's Ligament. The operation was unsuccessful from the diseased state of the vessel, hæmorrhage having come on after five days. The limb did not lose its heat from this operation.

The

The next Subject treated of is Emphysema, one case of which is brought forward. Much obscurity hangs over injuries of this kind; and authors are much at variance respecting their nature and treatment.

‘An Idea has generally prevailed,’ Mr. Abernethy remarks, ‘among surgeons, that if the pleura costalis were divided in the living subject, the lung would immediately collapse, as it is usually found to do in the dead one. But M. Bremond has shewn by experiments, that not only when an opening is made into the cavity of the thorax, but even when some of the ribs are removed, the lungs still occupy their natural situation, and are even thrust up into the opening during expiration. Mr. Norris has also lately shewn, by experiments undertaken for this purpose, as well as by observations on the effects of accidents, that frequently the lungs do not collapse when the cavity of the chest is exposed in the living animal; and I have also had occasion to observe, on dividing the pleura costalis in a case of supposed hydrothorax (in which, however, no water was found), that the exposed lung did not collapse; a circumstance which, I think, ought to encourage us to a more frequent performance of such an operation. In other experiments, however, the lungs have been known to collapse; and the circumstances on which either of these effects depends, are not perhaps well understood.

‘For these reasons, I believe, that in most cases of emphysema succeeding to broken ribs, pressure by bandage not only hinders the air from diffusing itself through the cellular substance, but serves to prevent it from escaping out of the wounded lung, and of course facilitates the healing of the wound, which would be prevented by the constant transmission of air. Its early application, therefore, will often prevent a very troublesome symptom, whilst at the same time, by keeping

keeping the fractured bones from motion, it greatly lessens the sufferings of the patient.

‘ In some cases where the lungs are wounded by the ribs, the air does undoubtedly get into the cavity of the thorax, as happened in the poor woman already mentioned, as I have also seen in other instances. When the air passes from the wounded lung into the cavity of the chest, and the lung becomes in consequence collapsed, still the symptoms and progress of the complaint will differ from the effect of circumstances which have not been much attended to. When the wound in the sides of the thorax allows of the expulsion of air from that cavity during expiration, and does not admit air during inspiration, it is not to be supposed that the wound of the lung can heal; for the cavity of the thorax must, under these circumstances, be filled from the wounded lung every time that it is enlarged during inspiration.

‘ But this state of circumstances, which is so particularly injurious, and which usually takes place when the lung has collapsed in the manner described, it is the business of the surgeon to remedy; and it may be accomplished in two ways: First, by preventing the escape of the air from the cavity of the chest, in which case the necessity of its being filled from the wounded lung will, in a great measure, be done away. And as I know surgeons have apprehended, that if an outlet was not given to air from the cavity of the chest, the opposite lung might become oppressed, I beg them to reflect a little on the state of respiration under these circumstances.

‘ To examine this subject, let us suppose the thorax expanded, and one of its cavities filled with air, at which time the patient attempts to make an expiration; what will be the effect? The air cannot return through the wound in the lungs; and we have supposed that it cannot escape through that in the pleura costalis. The muscles of respiration are unable then to produce any considerable change in the

dimensions of the cavity, without an exertion productive of pain, which it is not probable that they will make; the inactive diaphragm will not be thrust up into the hypochondrium as in natural expiration, and the ribs will remain nearly stationary; but in proportion to the degree of the expiratory effort that is made, the air may be condensed, and the mediastinum thrust to the opposite side of the chest. But no injury will arise from this pressure, neither can it happen in any great degree; for both sides of the chest being diminished at the same time, a slight compression of the opposite lung cannot be detrimental, since it helps to express the air from it,—the very effect which is now required; and as that lung is pressed inwards by the sides of the thorax, it will counteract any great pressure made on the mediastinum. Upon inspiration taking place, the condensed air will expand and fill the enlarged cavity, and the mediastinum will regain its natural situation; so that the function of the sound lung is scarcely, if at all, impeded by the compression which takes place on the opposite side of the chest.

‘ In whatever state the lungs happen to be when they are wounded, a bandage, if it can be borne, seems therefore to me extremely useful. By means of it, the pain and irritation which the motion of the fractured ribs must otherwise occasion, are in a great measure, or entirely, prevented. In that state of the lungs which I have first described, the pressure of a bandage prevents emphysema, and does no harm; in the other, it not only prevents emphysema, but does good, by keeping the collapsed lung at rest, and thereby free from the necessity of constantly transmitting air. Patients, however, will not always be able to wear a bandage when one lung is collapsed (particularly if any previous disease has existed in the other), as it equally confines the motion of the ribs on both sides, and as every possible enlargement of the chest becomes necessary for the due admission of air into the lung which still executes its functions.

Under

Under these circumstances, if the emphysema continues (and its continuance must always denote that the wound in the lung is not closed), I should esteem it the best practice to make a small opening into the chest, so that the external air might have free communication with that cavity ; and then the injured lung must remain motionless till its wound is healed, and the mediastinum will, in every state of the thorax, preserve its natural situation.

‘ As almost all the circulating blood must, in such cases, be transmitted through the vessels of one lung, if the quantity of that fluid be not greatly diminished, the pulmonary vessels will become turgid ; a larger effusion of fluids will therefore take place into the air-cells, and cavity of the chest, and thus the function of the acting lung will be materially impaired. This reasoning illustrates what experience has already determined, viz. that the preservation of life in these cases depends on the most copious blood-letting.

‘ The case which I have related, clearly shews, that the collapsed state of the lung affords an opportunity for the wound of its surface to heal : and when this desirable event is accomplished, the air which is at that time in the cavity of the thorax, will be speedily absorbed, and the lung will again acquire its former size and situation. But should the function of it be more immediately necessary, from a diseased state of that on the opposite side, or from other circumstances, it may be more quickly restored by exhausting the air, in the manner described.—If the cavity of the chest contains a quantity of fluids, and it is thought right to extract them, it cannot well be done by varying the posture of the patient so as to let them run out of the opening that has been made : the difficulty with which respiration is performed, will render such an attempt almost insupportable to the patient. It would therefore be better to introduce a hollow bougie, or some such instrument, into the posterior part of the thorax, there connect it to the

syringe, and thus extract the contained fluids. I need scarcely add, that the same method may be employed with advantage for the extraction of water from the cavity of the chest in hydrothorax.

‘ The great advantage of retaining the lung in a collapsed state is, if possible, more strikingly shewn when those bodies have suffered a greater degree of injury than can occur to them from the fracture of a rib. I have seen cases in which bullets have passed through the lungs near the root of those bodies, and where many of the large vessels were consequently torn, in which the blood has been poured into the cavity of the chest, has condensed the lung by its pressure, and thus suppressed the hæmorrhage. The injured vessels might, under these circumstances, unite; and the blood being let out of the thorax, the lung might gradually be restored to its former function. Yet in the cases which I was a witness to, the patients died of inflammation and fever; but the particular nature of the circumstances was unknown during the life of the patient; and of course the conduct appropriated to them was not pursued. The fluids contained in the cavity of the thorax had in these cases undergone a degree of putrefaction previous to the patient’s death; which state required their discharge.

‘ But should this be attempted in other cases, it becomes very essential to keep the thorax filled with air, lest the lungs should become prematurely inflated, the newly-healed part lacerated, the hæmorrhage renewed, or inflammation induced; and the surgeon would be able, I believe, without much contrivance, to regulate the inflation of the lungs, as circumstances seemed to indicate. Surgeons used formerly to keep canulæ in the thorax in these cases, with a design to give an outlet to fluids; but such means might have been beneficial by preserving the lungs collapsed; and they might have been continued from being found serviceable,

serviceable, though the manner in which they became so was unknown.

The concluding Essay is on the use of Mercurial Fumigations. The method here recommended was suggested by the Chevalier Lalouette, a Physician at Paris, in the year 1776. It consists in inclosing the patient, previously undressed, in a kind of box resembling a sedan chair, with an opening at the top to let out the head, and another at the bottom, to which is fitted a small grate or furnace, having in it a heated iron for converting the mercurial remedy into fume. Half an ounce of calomel, repeatedly sublimed from iron-filings, was thus converted into smoke, which surrounded the patient's body, and after some time settled on his skin, in the form of a white and very fine calx of quicksilver: a complete dress, having its inner surface fumigated with the same powder, was then put on. Instead of the calomel, sublimed as above, Mr. Abernethy uses calomel deprived of a portion of its acid by washing with the volatile alkali; two drams of aqua ammoniæ, to four ounces of calomel, in six ounces of distilled water.

By this method the system is generally affected in 3 or 4 days. The mercury, however, in this way, sometimes acted on the bowels, as much as when employed in the form of unction.

ART. VI. *Medicinische Beobachtungen und Erfahrungen aus den Sudpreussischen Königl. Feldlazarethen. i. e. Medical Observations and Experiments from the Royal South-Prussian Field-Hospitals. By Dr. F. W. Voss, Physician to the Army-Hospitals.* *Alg. Lit. Zeit : Feb. 1797.*

IN the Prussian Hospitals at Petrikau and Posen, in December 1794, and the three first months of 1795,

1795, there raged a malignant fever, which swept away a great number of soldiers ; extended itself over the whole district ; and caused no less havock amongst the inhabitants ; so that it was deemed pestilential. The author has given it the name of Putrid Fever. He admits generally two classes of Fevers, the inflammatory and nervous ; the latter of which he divides into the violent or acute, and the gradual, or mild species. He is of opinion that the *fuccus nervosus* is the great agent in disease ; and believes, therefore, that in violent nervous fevers, it is present in too great quantities at the origin of the nerves, and thence acts on the rest of the body in an unnatural manner : but that, on the contrary, in the mild or gradual species, there is a want of nervous fluid at the origin, and that it becomes too diffused in the rest of the system, by which the nerves are deprived of their usual irritability, and acquire too great sensibility. Whenever a new patient was admitted into the Hospital, the following mixture was administered for the three first days, let his fever be inflammatory or nervous : *R.* Tartar. Tartar. \mathfrak{z} j. Tart. Emetic. gr. ij—iv. Aq. com. \mathfrak{z} viii. mel. pur. \mathfrak{z} j. m. Neither china-root, nor valerian, the author observes, serpentaria, nor arnica, will be as effectual in malignant or putrid fevers, as emetics, especially if followed by the frequent use of wine. For the chance of the putrid fever does not consist in a total dissolution and putrefaction of all the animal juices ; but rather in an extreme weakness and torpor of the solid parts. Therefore in these fevers, where there is great accumulation in the *primæ viæ*, the vitriolic acid is much less indicated, than in the nervous. The danger of infectious diseases, he supposes, is not near so great as is commonly believed ; and that predisposition acts the greatest part in disease. But the cause of this predisposition is to be sought in the qualities of the air. In a state of convalescence from these diseases, the author considers there is an interrupted and slow formation of the
fuccus

fuccus nervofus, which excites the whole nervous fyftem, but in a quite different manner from what takes place in acute fevers. By ftrengthening means, therefore, the quantity of the nervous fluid ought to be augmented; by antifpafmodic and anodyne remedies the ordinary current thereof in the nerves muft be attempted to be reftored; and, laftly, by refolv-ents, all the channels fhould be rendered permeable.

The moderate ufe of fpirits is recommended, as effentially neceffary to foldiers in a ftate of convalefcence.—The author's method of treating Diarrhœa and Dyfentery is taken from Cullen. The following he found in every inftance effectual. *R.* Sal. Armon. ʒij. aq. menth. pip. $\text{℥}\frac{1}{2}$. with a fmall quantity of the liquor anodyn. min. Hoffman. He avoids opium; but gives the neutral falts and antimonial. The German furgeons well know, that the moderate ufe of ripe and good fruit neither produces flux, nor is hurtful in it,

ART. VII. *An Inquiry into the Origin and Antiquity of the Lues Venerea; with Observations on its Introduction and Progreſs in the Iſlands of the South Seas. To which is added a ſhort View of the various Remedies recommended in that Diſtemper, from its firſt Appearance in Europe to theſe Times: and a Method of Treatment ſuggeſted, by which the diſagreeable, and ſometimes fatal Effects, ariſing from an indifcriminate Uſe of Mercury are avoided.* By W. TURNBULL, A.M. Surgeon to the Eaſtern Diſpenſary. Third Edition, 12mo. 115 pages, price 2s. 6d. BOOSEY, London. 1797.

NO additions have been made to this pamphlet on its republication. The title ſufficiently beſpeaks its contents. It contains nothing that could induce us to be particular in our account of it.

ART. VIII. *An Appendix to a Treatise on the Operation for the Stone; containing the Description of an Instrument calculated to improve that Operation.* By JAMES EARLE, Surgeon to St. Bartholomew's Hospital. Octavo. 21 pages, price 1s. JOHNSON. London. 1796.

IN the operation of Lithotomy, one of the greatest difficulties which occur, is that of introducing the beak of the gorget into the groove of the staff; infomuch that several incisions are often made before this object is satisfactorily attained; not to mention the risk of the gorgets hitching in some of those ragged incisions, and slipping on either side of the staff, which sometimes happens.

These difficulties may arise from several causes, from the thickness of the urethra and muscles which cover it, preventing the groove from being distinctly felt; from the mobility of those parts, whence they are liable to slip on one side of the staff; from the unsteadiness of the hand of the assistant who holds the staff; from the motion of the patient throwing it out of its position and altering its situation; or, lastly, from want of dexterity in the operator. Without doubt, a great advantage would arise, could the groove be immediately laid bare, so as to admit the introduction of the gorget without any delay or uncertainty. The alteration here suggested, is calculated, the author thinks, to effect this desirable purpose. It is described as follows:

The instrument consists of a short staff, with an open groove, connected by a hinge to the handle of another staff of the usual size, curvature, and shape, but which, for the sake of distinction, is denominated the *long staff*. The hinge, by means of a pin or moveable axis, is capable of being disjoined at pleasure. The short staff is sufficiently curved to go over the penis and scrotum, and long enough to reach to
that

that part of the long staff which is just below the beginning of its curvature. The end of the short staff, made somewhat like a pen, with the sides sharpened and finely pointed, is adapted to shut into the groove of the long-staff, and its cutting edges are defended from being injured by a proper receptacle, which is prepared for it in the groove of the long-staff. When the instrument is shut, the groove of the short staff leads into that of the long staff, so as to form one connected and continued groove. It is necessary that the short-staff be made strong and firm to resist any lateral pressure; and, for the same reason, a segment of an arch is fixed on the long-staff at a short distance from the hinge; which being fitted to pass through an opening in the short staff, effectually keeps it steady, and prevents the point from deviating on either side of the groove, so that when shut down, the point of the short-staff is certain of passing into the cavity formed for its reception.

With respect to the use and application of the instrument, the patient being placed in the usual situation, the long-staff unconnected with the short one is to be introduced in the usual manner into the bladder. The stone being satisfactorily felt, the short-staff is to be connected at the hinge, which, by means of the pin, is easily effected. The incision is then to be made in the usual manner through the skin and cellular membrane, and a second incision through the muscles, so as nearly to lay bare the urethra. The operator then being perfectly convinced that the extremity of the long-staff is safely and sufficiently introduced into the cavity of the bladder, must bring the end of the short-staff down, and press it against the urethra, which it will immediately pass through, and pass into the cavity prepared for it in the groove of the long-staff. When the opening is thus made through the urethra, and consequently the point of the short-staff fixed in the groove of the long-staff, the two staves are to be held firmly together by the operator's
left

left hand, and nothing remains but to apply the beak of the gorget to the groove of the short-staff, and to push it on till it be received in the groove of the long-staff; and if the staff be made with a contracted groove, it will enter just where the contraction begins, and thus *must* be safely conducted into the bladder. This being accomplished, the staves are to be withdrawn, and the gorget continuing in the bladder, the operation is to be finished in the usual way.

How far this addition to the instruments of Lithotomy will obviate the inconveniences of this part of the operation, without introducing others of equal importance, must be determined by experiment and observation. We shall observe only, that it will be difficult to prevent altogether a lateral inclination of the short staff; and how very small a degree of this at the hinge, will be sufficient to throw the point to one side, or the other, of the long-staff, we may readily conceive.

Another advantage which the author thinks will be derived from this improvement is, that of determining the proper place for beginning the external incision, with more precision than could be heretofore done. The long-staff being introduced into the bladder, and the short one fitted to its place, the point is to be brought down over the scrotum, and made to touch lightly on the perineum; thus the part is pointed out where the opening is to be made into the urethra, and consequently the operator will take it for his guide in making the external incision.

ART. IX. *The Hygrology, or Chemico-Physiological Doctrine of the Fluids of the Human Body ; translated from the Latin of J. J. PLENCK, of Vienna, Professor of Chemistry, &c. By ROBERT HOOPER, of Pembroke College, Oxford, M. D. F. L. S. &c. Octavo, 270 pages, price 5s. BOOSEY, London. 1797.*

WE gave some account of the original of this ingenious work in a former number of our Review.* Though by reason of its elementary nature, and systematic logical arrangement, it is particularly recommended, the Translator observes, to Students ; yet will the experienced physiologist find many things agreeably recalled to his memory : so that with propriety it may be said of this, as well as of the author's other works,

Indocili discant, et meminisse periti.

The motives which induced the author to adopt the new Chemical Nomenclature, in part only, and in part to retain the old, are unknown ; for he has not explained himself on this head. The Translator has adhered to the Nomenclature adopted by the author ; but in order to render the work more complete, he has subjoined at the end, an alphabetical list of the old and new terms, in opposite columns. By this means, the reader, who is unacquainted with the names applied to substances by the older chemists, will, by reference, find the modern ; and on the other hand, he, who is not familiar with the new terms, will also find the old annexed. The Translator has avoided all comment in this place, as it is his intention on a future occasion, to give some observations on the chemical analysis of the Human Fluids, in a distinct Treatise ;

* Vide Med. et Chir. Rev. vol. II. page 154.

when M. Plenck will of course, pass under his review.

We are glad to see a Translation of this very useful work, as it deserves to be generally known. The Translator appears to have done his part faithfully.

ART. X. *Medical Inquiries and Observations: containing an Account of the Bilious remitting and intermitting Yellow Fever, as it appeared in Philadelphia in the Year 1794: together with an Inquiry into the Proximate Cause of Fever; and a Defence of Blood-letting as a Remedy for certain Diseases.* By BENJAMIN RUSH, M. D. Professor of the Institutes, and of Clinical Medicine, in the University of Pennsylvania. VOL. 4th, Octavo 258 pages, price 6s. Boards. Imported by C. DILLY, Poultry, London, 1797.

IT is always with pleasure that we take up the works of this respectable writer. We are sure to meet with both entertainment and instruction. His account of the Yellow Fever as it appeared in Philadelphia in the Year 1793, gave proofs of attentive observation and successful research. In the present he has described the same disease, as it appeared the following year, and has brought more facts to light on the subject of its origin. It serves, likewise, to point out that variety in the symptoms and method of cure, which is produced by the difference of seasons in all Epidemics.

The diseases which succeeded the epidemic in 1793* were all of a highly inflammatory nature. In the spring and summer of the following year, diseases

* For a full account of this, see Med. Review, VOL. I page 199.
wore

wore the same complexion; and hence Dr. Rush expected the fevers of the summer and autumn would be of a violent and malignant nature. The first case of the disease which appeared, was noticed on the 6th of June, and during the remaining part of the month, the author was called to several cases of fever which had symptoms of malignity of a suspicious nature. In the following months the disease became frequent.

Notwithstanding, however, the symptoms clearly characterized the affection, and pointed out its identity with the fever of the preceding year, yet its existence was denied by the greater part of the faculty, and the author incurred much obloquy for asserting it, not only from his Medical Brethren, but from the Citizens, and a Committee of Health which had been appointed on the occasion. Thus to the true commercial spirit is sacrificed frequently the real interests and safety of the community!

This conduct, however, is not peculiar to the Citizens or Physicians of Philadelphia. A similar conduct, the author observes, has existed in all Cities, upon the appearance of great and mortal epidemics.

It prevailed lately in Algiers, where the Dey refused to let some American prisoners leave a town infected by the plague, denying the existence of the disorder in that place. Successive attempts by numerous publications, were made to conceal the prevalence of the yellow fever in the cities of New York, Baltimore and Charleston, for two years past. Such was this selfish disposition in the Committee of Health in New York in the year 1795, that they wrote to the Committee of Health in Philadelphia, to deliver up the names of several persons who had in private letters to their friends, which had been published, asserted that the yellow fever prevailed in that city. But the contracted spirit of this Committee did not end here. After they were compelled to acknowledge the prevalence of the fever among them, they endeavoured
to

they were called to, by which means the production of a large mass of contagion was prevented. This peculiarity in the practice of the opposing physicians, did not escape the notice of several of the reflecting citizens of Philadelphia, who remarked very properly, that two or three bleedings, and purges of calomel and jalap were not the usual remedies for intermitting and remitting fevers of common years.

The cold weather in October checked the fever, but it did not banish it from the city. It appeared in November, and in all the succeeding winter and spring months. The weather during these months being uncommonly moderate, will account for its not being destroyed at the time in which the disease usually disappeared in former years.

The causes which predisposed to this fever were the same as in the year 1793. Persons of full habits, strangers, and negroes were most subject to it. It may seem strange to those persons who have read that the negroes are seldom affected with this fever in the West Indies, that they were so much affected by it in Philadelphia. There were two reasons for it. Their manner of living was as plentiful as that of white people in the West Indies, and they generally resided in alleys and on the skirts of the city, where they were more exposed to noxious exhalation, than in its more open and central parts.

The summer fruits, from being eaten before they were ripe, or in too large a quantity, became frequently exciting causes of this fever. It was awakened in one of my patients by a supper of peaches and milk. Cucumbers in several instances gave vigor to the miasmata which had been previously received into the system. Terror excited it in two of my patients. In one of them, a young woman, this terror was produced by hearing, while she sat at dinner, that a hearse had passed by her door with a person on it who had died of the yellow fever. Vexation excited it in a foreign master of a vessel in consequence

off

of a young woman suddenly breaking an engagement to marry him. The disease terminated fatally in this instance.

‘ It was sometimes unfortunate for patients when the disease was excited by an article of diet, or by any other cause which acted suddenly upon the system; for it led both them, and in some instances their physicians, to confound those exciting causes with its remote cause, and to view the disease without the least relation to the prevailing epidemic. It was from this mistake that many persons were said to die of intemperance, of eating ice creams, and of trifling colds, who certainly died of the yellow fever. The rum, the ice creams, and the changes in the air, in all these cases acted like sparks of fire which set in motion the quiescent particles of tinder or gunpowder.

‘ I shall now proceed to describe the symptoms which this fever assumed during the periods which have been mentioned. This detail will be interesting to physicians who wish to see how little nature regards the nosological arrangement of authors in the formation of the symptoms of diseases, and how much the seasons influence epidemics. A physician who had practised medicine near sixty years in the city of Philadelphia, declared that he had never seen the dysentery assume the same symptoms in any two *successive* years. The same may be said probably of nearly all epidemic diseases.’

In the arrangement of the symptoms of this fever, the author follows the order he adopted in his description of the former disease: viz. as they appeared in the sanguiferous system—the liver, lungs, and brain—the alimentary canal—the secretions and excretions—the nervous system—the senses and appetites—upon the skin—and in the blood.

In the sanguiferous system, few symptoms were observed different from the fever of the preceding year. The slow and intermitting pulse occurred in many, and a pulse nearly imperceptible in three instances.

stances. It was seldom very frequent. Hæmorrhages occurred in all the grades of this fever, but less frequently than the year before.

The liver did not exhibit the usual marks of inflammation. The lungs were frequently affected; and hence the disease was in many instances called a pleurisy or a catarrh. It was distinguished from the pleurisy of common years, by a red eye; by a vomiting of green or yellow bile; by black stools; and by requiring very copious blood-letting to cure it. The head was affected, not only with coma and delirium, but with mania. The dilatation of the pupil was universal:

The alimentary canal suffered as usual in this fever. The matter discharged by vomiting was green or yellow bile in most cases. Pain and tenderness on the region of the stomach took place in several cases: and pains in the bowels were very common, attended sometimes with Diarrhœa. Obstinate costiveness without pain was likewise common. The disease appeared with symptoms of dysentery in many.

The fœces were black in the highest degrees of the fever. The urine was in most cases high-coloured, and in some scanty, or suppressed. The tongue was always moist in the beginning. When the disease was left to itself, or treated with bark and wine, it became of a fiery-red colour, or dry and furrowed, as in typhus. Sweats were more common, than in 1793, but they seldom terminated the disease. Tears sometimes flowed involuntarily.

Delirium was less common than before. Fainting was more so. Giddiness and hiccup were frequent. Pains of the head and limbs were frequent. The more they were confined to the bones and back, the less danger was to be apprehended from the disease. In two cases a locked jaw attended, but yielded in half an hour to blood-letting. In one there was universal tetanus.

The

The senses and appetites were affected in an irregular manner.

Some patients had swellings in the lymphatic glands.

The yellowness of the skin which sometimes attends this fever was more general, but more faint, than in the year 1793. A burning heat of the skin was common; sometimes local, sometimes general. It had no connection with the rapidity or force of circulation in the blood.

There was but one reigning disease in town, the author observes, during the autumn and winter; this was a bilious, remitting, or intermitting, and sometimes a yellow fever: all the fevers from other remote causes than exhalation or contagion, partook more or less of the symptoms of the prevailing epidemic.

The disease appeared in the form of a tertian fever; but most frequently in the form of a remittent, and the exacerbations occurred most commonly in the evening. It assumed the symptoms of colic and cholera morbus; of dysentery; of apoplexy; of madness; and of pleurisy. All other diseases seemed to partake of this.

This fever was contagious in a very few instances, compared with the preceding year; but its operation on the body, where, from the absence of an exciting cause, it did not produce fever, was the same as before. The best mode of prevention was an abstemious mode of living, particularly with regard to animal food and strong drinks of all kinds.

The origin of the fever, Dr. Rush thinks, was very evident. It was produced, he supposes, by the exhalations from the gutters, and the stagnating ponds of water in the neighbourhood of the city. Where there was most exhalation, there were most persons affected by the fever. Hence the poor people, who generally live in the neighbourhoods of the ponds in the suburbs, were the greatest sufferers by it. One reason

reason why most of the physicians refused to admit the presence of the yellow fever in the city, was because they could not fix upon a vestige of its being imported.

The method of cure adopted by the author, together with the remaining part of the volume, must make the subject of a future Number.

(To be continued.)

T H E
M E D I C A L and C H I R U R G I C A L
R E V I E W.

A U G U S T, 1797.

ARTICLE XI. *Duncan's Annals of Medicine.* Vol. 1.

(Continued from page 50.)

I N our last number we gave an account of the first section of this work. The second is devoted to original communications.

1. *Some Cases of Biliary Obstructions, from Calculi, cured by Salivation, by Dr. THOMAS GIBBONS, of Hadleigh, in Suffolk.* There are 13 cases here adduced, in which the good effects of calomel, after having excited salivation, were very decided. In two or three only, Gall-stones were afterwards discharged by stool; whence the author is inclined to suppose, the calomel acted as a solvent of the calculi, and in this way removed the obstruction; but this is uncertain, and, in our opinion, not very probable. The symptoms of the affections here related were, acute pain in the region of the gall-ducts, together with the ordinary appearances in jaundice; and these recurring frequently. The cases are so similar, that the recital of one will give a sufficient idea of all the rest.

‘ Case 5. On the 22d of March, 1781, I was sent for to Mrs. French, a widow-lady of this town, (Had-

leigh in Suffolk), about sixty years of age. She complained of acute pain, at times, in the biliary duct: her skin and urine were very yellow. After an emetic, I ordered her the following medicines.

R. Calom.

Aloes focot. ā. ā. gr. ij.

Sap. Venet. gr. viij.

Syr. simp. q. s. ft. bolus mane et vespere fumendus cum dosi misturæ salinæ.

She continued the medicines for about three weeks without salivation, or removal of the obstruction. She now became feverish: and I thought it better to omit the calomel, and give her some cooling medicines. She got rid of her fever: and on the 21st of May following, returned to the calomel, &c. but took only one grain for a dose; which she continued for some time, without any abatement of her disorder. I then discontinued the calomel, keeping her bowels open with aloes, rhubarb, and tartar-emetic, to which was joined a little soap, giving her opiates occasionally. From this time, to the end of the year 1782, she took opening medicines only, but of which, and all others, she grew tired. She was persuaded to try some nostrum; but her jaundice never left her. On the 8th of October, 1783, I was desired to visit her again: she then took the following medicine.

R. Calom. gr. i.

Aloes foc. gr. iij.

Conf. cynosb. gr. v. ft. bolus omni nocte vel alterna fumendus, si alvus astricta sit.

She took these, not always regularly, and opiates, till March 18, 1794; during which time I saw her but seldom, Mr. Simpson, who is since dead, her apothecary, having the sole care of her. On the 18th March, 1784, I was desired to visit her again. Her complexion and her urine were now of a colour between black and yellow; her stools without bile. I now had a wish to try what the addition of a small quantity of opium, to prevent the calomel going

going off by the bowels, would do. I therefore ordered as follows:

R. Calom.

Aloes soc.

Philon. Lond. ā. gr. iv.

Syr. simp. q. s. ft. bolus omni nocte cum dosi
misturæ salinæ sumendus.

‘ She continued in the use of these medicines for near a month before a ptyalism came on. She now, I believe, spit a pint in a day for near a month before any bile got into the duodenum; and even then it passed but in small quantity, and the colour of her skin was not altered. However, as the duct was not wholly obstructed, I prevailed upon her, supporting her with cordials between her medicines, to persevere: which happily she did for more than two months, spitting every twenty four hours about a pint and a half. She then was perfectly cured, and has had no return of jaundice since. She is now more than seventy years of age. No gall-stones were found.’

II. *A Case of Hydrocele, cured by Injection.* By Dr. DAVID HOSACK, of New York. This case affords nothing new.

III. *A Case of obstinate Constipation of the Bowels, cured by Calomel,* by the same. The constipation in this instance continued upwards of twenty days, during which time every variety of purgatives was had recourse to ineffectually, and amongst the rest the fumes of tobacco. Calomel was given frequently in large doses, to the amount of 480 grains, before the mouth became affected; soon after which, evacuations of hardened fæces took place. Symptoms of inflammation came on, in the course of the complaint, but were subdued by blood-letting and the warm-bath.

IV. *History of a Case of Cynanche, attended with Symptoms of a high Degree of Putrescency, where a favourable Crisis succeeded a paroxysm of furious Delirium.* By Dr. ANDREW CRICHTON, of Jamaica. What appears extraordinary in this case, is the violent temporary excitement which took place as the crisis of the complaint, at a time when the powers of life seemed to be ebbing very fast, and putrefaction seemed already to have come on.

V. *History of a Case of the Epidemic Fever of Jamaica, terminating successfully; in which a very large Quantity of Mercury was employed, without any obvious Operation during the Fever.* By Dr. MACLARTY, Physician in Jamaica. Five grains of calomel were given every hour, and two drachms of strong mercurial ointment rubbed in three times a day, till an ounce had been employed. On the following day, the fever was nearly gone; the use of mercury was therefore suspended, and bark given in dram-doses every hour in its stead. Under this treatment, the patient got rapidly worse, and appeared so ill, as to have no chance for recovery. The mercurials, however, were again had recourse to, and with the same good effect as at first. He used altogether 270 grains of calomel, and 20 drachms of the ointment, without in the least affecting the mouth; so that salivation does not appear to be the *sine qua non* of the cure by mercury.

VI. *Observations on the Epidemic Fever of Jamaica: with the History of a Remarkable Case terminating fatally, in which a great quantity of Mercury was employed without any obvious Operation.* By Dr. JOHN TODD, Physician in Jamaica. The author is of opinion, that the colour in this fever, from which its denomination Yellow is derived, is not owing to an absorption of bile, diffused over the surface

surface of the body, as in jaundice, as neither the eye nor urine are changed by its appearance : but that the skin, towards the close of the complaint, puts on a dusky hue, indicating a dissolution of part of the red globules of the blood, and their escape generally into the capillaries.

The case here related, with the author's remarks, contradicts, our readers will observe, in some important points, the opinions and experience of Dr. Rush ; we are therefore induced to give it at length.

‘ Miss W—, a young lady from Scotland, eighteen years of age, after residing about nine months in this country, in a healthy situation, unexposed to any excess of heat or cold, or to any particular circumstances that could affect a vigorous and sound habit of body, was, in the morning of the 1st February 1795, taken ill with fever. She complained of acute pain in the head, particularly over the eyes, sickness at stomach, with much inclination to vomit ; the general heat great, countenance florid, eyes watery, with considerable restlessness and anxiety ; her pulse beating about 120 in a minute, full and strong. She took immediately five grains of calomel, and a wine-glassful of a mixture of salts and manna every hour after. In the evening, I found a continuance of the same symptoms, notwithstanding the medicine had operated eight times copiously. She got ten grains of calomel at bed-time, which continued the operation through the night. On the morning of the second, the whole of the symptoms were nearly the same : She was then ordered some of the absorbent powder, with a little jalap, to correct and carry off a sourness which she complained of feeling in the mouth, and of belching from the stomach. The medicine gave her several evacuations ; and, as the pain of the head continued, a blister was applied to the neck, to mitigate or remove it.

‘ At this time she began to vomit every thing that was given her. A saline mixture was ordered to be
I 3 taken,

taken, with a proportion of lime-juice, in the act of effervescence, to counteract the irritability of the stomach. These means appeared to have succeeded. From the morning of the third, all her symptoms were much relieved, a slight pain of the head excepted. She had perspired freely through the night, had slept a little, and was tranquil and composed through the whole of it.

‘ It was now thought prudent to begin immediately the administration of the Peruvian bark. She took doses of sixty grains by the mouth ; and got an injection every two hours, in which were 120 grains of the powder : she retained about eight doses of the powder by the mouth. But towards evening, an accession of all the former symptoms took place. As the vomiting was the most distressing, a blister was applied to the stomach, with a view to allay it, which it did as soon as its operation was effective. About midnight, she was attacked with a new and painful symptom, a violent hiccough. A foetid mixture was given to relieve it ; and as the heat and pulse were again moderate, the bark-glysters were continued. She began, about ten o’clock in the forenoon, to complain of a severe burning heat, all through the œsophagus, as if what passed that way scalded her. A blister was immediately applied over the whole course of the gullet : but as the vomiting of every thing she took continued after this, calomel was resorted to, as the only thing from which there was any hope of obtaining relief. All the symptoms were now highly aggravated, with incessant change of position, great anxiety, and considerable delirium.

‘ She began with five grains of the calomel every hour, washing it down with a little sago or gruel. The vomiting continued the whole day and night, but it did not appear that any of the calomel pills were returned. On the morning of the 5th, the matter brought up changed its colour to blackness, resembling the grounds of coffee, and usually distinguished in

in this disease by the name of the black vomit. Four ounces of strong mercurial ointment were rubbed into the legs and thighs through the day, and the calomel continued as before.

‘ About this time a dusky colour was observed to diffuse itself over the face, neck, and breast; the pulse returned to its natural state; the skin became moist; and the delirium and restlessness were greatly abated. Except the circumstance of the continuance of the vomiting of black matter, every thing wore a favourable appearance. The mercurial frictions were renewed on the morning of the sixth, and the calomel continued as before.

‘ It had been found necessary on the fourth, the fifth, and this day, to give a laxative glyster, to procure one or two evacuations each day. The fæces passed nearly resembled the matter thrown up from the stomach. Towards the close of the day, the disposition to vomiting increased, the pulse diminished in force and quickness, and the delirium was considerably augmented. The dose of the calomel was enlarged through the night; the frictions were continued, and wine given after every dose of the medicine.

‘ On the morning of the 7th, profuse sweats took place through every part of the body. The pulse sunk to a thread-like vibration; she became tranquil, and sensible of her approaching death: The dusky hue became more general over the body, and the belchings of black matter from the stomach were frequent; thus declining in strength, till about seven o’clock in the evening, when she expired, having taken 5 grains of calomel, and used by friction eight ounces of the strong mercurial ointment, without any of the usual effects of that medicine being perceived. She had no hæmorrhage; nor did the hiccough return after the use of the fetid mixture; and the complaint in the gullet yielded to the effects of the blister.

‘ The error committed in this case was delaying the exhibition of the calomel until the stomach had lost the power of being influenced by its action : This arose from the reluctance of the family to the use of this remedy, much public discussion having taken place, and much difference of opinion being entertained, respecting the usefulness of this medicine in the prevailing epidemic.

‘ The observation of the first importance in this disease, respects the affection of the stomach in an unusual and peculiar manner, indicating that organ to be the principal seat of the complaint ; for it is a fact a thousand times experienced, that calomel has been given to the amount of five or six hundred grains, without displaying any action on the stomach or intestines, though, during that period, the usual dose of any purgative medicine has succeeded in its common operation. It has also been observed, in almost every case, that where the mercurial has affected the salivary glands, and produced ptyalism, the patient has recovered. On every occasion where I have seen the Peruvian bark given, it has invariably increased the irritation of the stomach, the heat, and the quickness of the pulse : and when it has been introduced into the intestines by injection, considerable tumefaction and pain about the navel has taken place ; and, in some cases, a total stoppage of the urine.

‘ After a salivation has succeeded the use of calomel, the Peruvian bark is generally given with success, to restore the tone of the stomach, and to restrain the discharge from the mouth. The cold-bath has been lately tried without success. Blood-letting, which excited so much discussion, and had so many advocates in consequence of the temporary abatement of the general symptoms, is now very nearly abandoned ; nor was it relinquished by its supporters, but on the most complete proofs of its fatal effects. Indeed, the minds of medical men appear now to be made up as
to

to the most proper treatment of this fever; and in mercury is placed their dependance.

VII. *The History of a Singular Case of Diabetes successfully treated; by Dr. PETER SHEE, Physician at Kilkenny.* The patient was about sixty years of age. Besides an immoderate discharge of pale urine, there was a paralytic affection of the right side, with violent convulsive shakings. Bark, steel, elixir of vitriol, opium, and alum, were used without effect, before the author was called. His indications were, to obviate spasm and convulsion, and to join mild tonics; to fulfil them, he advised Gum Kino, Camphor, Flor. Zinci, and Aromatics, with Simarouba, Valerian, and Tinct. Catechu. In ten days the complaint gave way, and weakness only remained.

From the relation here given, the real nature of the disease is by no means clear; nor are we disposed to think, with the author, that camphor promises to be highly useful in Diabetes: at least the present case warrants no such conclusion.

VIII. *The History of a Case, terminating fatally, from swallowing a Plumb-stone.* By Dr. GEORGE BORTHWICK, Physician at Kilkenny. On dissection after death, the stone was found in the lower extremity of the Trachea where it divides. At the time of the accident there was no reason to suppose that the plumb-stone had got into the Trachea, as no cough came on till the next day.

‘ In this case,’ the author observes, ‘ there was much singularity from the child’s continuing well until the day after the accident. There was every ground to believe, that the stone had passed the œsophagus soon after being swallowed, since, during the first day and night, there were no symptoms that could induce any suspicion of its having taken a different road.

‘ I have

‘ I have stated, that the use of the probang several days subsequent to the accident, produced great relief for twenty-four hours, and a removal of the pain in the throat, so constantly complained of. It is probable, that the probang, though in the œsophagus, changed the situation of the stone in the trachea to another place, where for some time it gave no irritation; but as soon as irritation was produced, the violent cough returned. This is rendered probable, when we recollect, that in the first instance, the child continued for more than twenty four hours free from uneasiness, after the stone had fairly got into the trachea.

‘ It would seem, that previous to the use of the probang, the stone was fixed in the trachea, about midway between the larynx and the sternum, where the pain was always felt; and that afterwards it was not stationary, unless from its own gravity. It is probable, that when the child was brought to me, the violent symptoms were owing to the stone being only in its passage through the larynx or glottis; for although I felt no extraneous substance, the introduction of the finger would most likely push down the epiglottis; and therefore, though the stone might be partly in the glottis, it could not have been discovered. The possibility of such an occurrence should be kept in view by practitioners, as there might be a chance of extracting the extraneous body; or, should it escape into the trachea, a knowledge of this fact would govern the prognosis and future treatment with more precision.

‘ Had it been certainly known, that the stone was in the trachea, it is probable, that if bronchotomy had been performed on that part of the trachea where the pain was felt, the stone might have been extracted, and the patient saved. Although no particular spot should be pointed out by pain, yet, if there is a certainty of an extraneous body having got through the larynx, which is not likely to be thrown up by coughing,

ing, the operation might be warrantable ; and, by proper forceps, the body might be laid hold of and extracted, though at some distance from the opening made in the trachea. Where any doubt may remain of the extraneous body having got into the trachea, a surer diagnosis perhaps could not be found, than the history and dissection of this case afford.

IX. *Two Cases, shewing that the Anterior Part of the Brain may sustain considerable Injury without a fatal Consequence.* By Dr. JOHN NELSON SCOTT, Physician in the Isle of Man, &c. There are many cases of this kind on record.

X. *History of a Case in which Singular Symptoms occurred from the swallowing of an Iron-Nail, which remained in the Stomach for about fifteen Months.* By Dr. PHILIP ROBARTS WILSON, Physician at Barnet. The symptoms which took place, were pain in the region of the stomach, with irregular fever, and night-sweats ; at length the nail was discharged spontaneously by vomiting, and the child recovered.

This concludes the second section. The title of the third is, *Medical News* : of the first article, viz. Mr. Scott's Account of the Effects of the Nitrous Acid in Lues Venerea, we have already spoken.* We understand a trial of this remedy has lately been made with success in this country, which we shall probably have to notice shortly.

The next article is an Account, by Mr. John Kennedy, Surgeon in the East Indies, of a Febrifuge Bark which he has lately employed. The tree affording this bark, is called the toon-tree ; and is a new species of the *Swietenia* ; it possesses bitterness and astringency.

* Medical Review, Number 18, VOL. III, page 487.

Some observations next follow, by Dr. Withering of Birmingham, respecting pneumatic medicine. Enough has been done, he thinks, to authorize him to say, that a cure of consumption is yet to be sought for. Hydro-carbonate and oxygene, he observes, are the two airs that have mostly been used ; and these should be diluted with eighteen or twenty times their bulk of atmospheric air. The former weakens the stroke of the pulse, occasions vertigo, and sometimes excites nausea. It produces a disposition to sleep, abates the cough, and eases the respiration in some asthmatic affections ; but in active hemoptoe, it effects a cure more speedily, and more pleasantly, than any other means he has tried. Oxygene, on the contrary, excites the action of the arterial system, warms the extremities, and seems to invigorate the vital principle without exhausting it. Dr. Withering has lately used it with advantage in two cases of melancholy ; and he has seen it remove the paralysis of lead, which had resisted the common means.

On the Gas contained in the Air-bladder of the Sword-fish. By Dr. FRANCIS RIGBY BRODBELT, of Jamaica. From experiment it appears that this air is oxygene, and is supposed by the author to serve the purposes of life, when the animal is far below the surface of the water.*

Some observations on the anatomy of the Shark, are given by Mr. George Kellie, Surgeon.

Following this, is the copy of a circular Letter sent by Dr. Richard Pearson, of Birmingham, to several of his friends, dated July 1796, respecting the use of the vapour of vitriolic æther in phthisis pulmonalis. The patient is directed to pour one or two tea-spoonfuls of æther, into a teacup or wine-glass, and afterwards to hold the same up to the mouth, and draw in the

* M. Fourcroy, we believe, found fixed air in the air-badder of fishes.

vapour that arises from it with the breath, until the æther is evaporated. This is repeated three, four, or five times in the course of a day ; for a month or six weeks, according to circumstances.

The first effects of this application, the author observes, are an agreeable sensation of coolness in the chest, an abatement of the dyspnœa and cough, and, after ten minutes or a quarter of an hour, easier expectoration. The ultimate effects, provided other proper measures be not neglected, for this is not to supersede the use of other medicines, but to be employed in conjunction with them, are, a removal of the local inflammation, a cleansing and healing of the ulcerated lungs, and a suppression of the hectic fever. To assert that all these beneficial consequences will flow from its application in every species and degree of phthisis pulmonalis, would be adopting the language of quacks, and insulting the understanding of every one experienced in the profession : But to say that some of these good effects are likely to result from its use in most instances, and most of them in a great number of instances, is asserting only what an experience of two years, in a situation where the opportunities of making trial of it have been very frequent, has fully confirmed.

‘ The salutary operation of the æther applied to the lungs in the form of vapour, I have found to be greatly promoted by several volatile substances that are soluble in it, but by none more so than the cicuta. By macerating a sufficient quantity of the dried leaves of this plant in æther, for the space of three or four days, or at most a week, and occasionally shaking them together, a very saturated tincture is obtained, which may be inhaled in the same manner, and in the same doses, as the pure æther. My proportions are a scruple or half a dram of the powdered leaves to every ounce of æther. The narcotic particles of the cicuta, conveyed in this manner, along with the æther, to the diseased lungs, act as a topical application with the
best

best effect : hence æther, thus impregnated, succeeds in most instances better than when it is employed alone. The only unpleasant circumstance attending the inhalation of this æthereal tincture of cicuta, is a slight degree of sickness and giddiness, which, however, soon go off.

‘ It cannot be expected that I should here point out every symptom, or set of symptoms, which indicate or forbid the use of this application : I shall only remark, that it appears to be best suited to the florid, or what is commonly termed the scrophulous consumption. Where the pulmonic affection is complicated with mesenteric obstruction, or diseases of the other viscera, or a dropical condition, it affords but transitory relief ; and in the very last stage of the disorder, the proper time of using it is past.

Dr. Girtanner, has long employed himself in analysing some bodies hitherto considered as simple, and thinks he has obtained the following results.

1. Phosphorus consists of azote and hydrogen, like ammoniac.
2. The fixed alkalis consist of carbone and azote, soda containing more azote, potash more carbone.
3. Sulphur consists of carbone and hydrogen.
4. The fluoric acid has a compound, probably triple, base.
5. Arsenic seems to consist of carbone, azote, and hydrogen.

The proofs of these assertions are soon to be published at length in Gren’s Journal of Natural Philosophy.

The following extract from a letter to the Society for the Encouragement of Arts, Manufactures, and Commerce, respecting the preparation of opium in this country, is highly interesting.

‘ Nothing can be more simple, or attended with less expence, than the making or extracting the pure
and

and genuine opium from the large poppies, commonly called or known by the name of Garden-poppies, the seeds of which I would advise to be sown the latter end of February, and again about the second week of March, in beds three feet and a half wide, well prepared with good rotten dung, and often turned and ploughed, in order to mix it well, and have it fine, either in small drills, three in each bed, in the manner fallads are sown ; and when about two inches high, to thin them one foot apart, or otherwise to rear them in beds in the broad-cast way, and thin them to to the same distance ; and if the weather should prove wet at that time, those that are taken up may be transplanted ; but I do not suppose that the transplanted ones will answer, as they have but one root, and require frequent waterings. Keep them free from weeds, they will grow well, and produce from four to ten heads, shewing large and different coloured flowers, which, when the leaves die away and drop off, the pods then being in a green state, is the proper time for extracting the opium, by making four small longitudinal incisions with a sharp-pointed knife, about one inch long, on one side only of the seed-pod, just through the scarf-skin, taking care not to cut to the seeds. Immediately on the incision being made, a milky fluid will issue out, which is the opium, and, being of a glutinous nature or substance, it will adhere to the bottom of the incision ; but some are so luxuriant, that it will drop from the pod on the leaves underneath. The next day, if the weather should be fine, and a good deal of sunshine, the opium will be found a greyish substance, and some almost turning black. It is then to be scraped off the pods, and, if any, from the leaves, with the edge of a knife, or an instrument for the purpose, into pans or pots ; and in a day or two, it will be of a proper consistence to make into a mass, and to be potted.

‘ As soon as you have taken away all the opium from one side of the pod, then make incisions on the opposite

opposite side, and proceed in the same manner. The reason of my not making the incisions all round at the first, is, that you cannot so conveniently take away the opium ; but every person, upon trial, will be the best judge.

‘ Children may with ease be soon taught to make the incisions, and to take off the opium ; so that the expence will be found exceedingly trifling. The small white seeds, in that state, will be found very sweet and pleasant, and may be eaten without the least danger ; and it is the custom in the East, to carry a plate of them to the table, after dinner, with other fruits.

‘ I intend, this year, to keep apart a small quantity of opium from each coloured poppy, to find out if any one, more than another, produces a greater quantity, or of greater strength, and shall save seeds of each, to sow separately the next spring. I am of opinion, that numbers of inclosures, taken from hills, in a south aspect, with a very little expence, may be brought into a proper state for the growth of poppies.

‘ I should think, that an instrument may be made, of a concave form, with four or five pointed lancets, about the twelfth or fourteenth part of an inch, to make the incisions at once, and likewise something of the rake kind, so that the three drills, which I have directed to be made in each bed, may be performed at the same time.

‘ By a calculation which I have made, supposing one poppy growing in one square foot of earth, and producing one grain of opium, more than fifty pounds will be collected from one statute-acre of land ; but upon recollecting, that one poppy produces from three or four to ten heads, and in each head from six to ten incisions are made, and I am positive, from many of them, (I mean one incision), the last year I took away two or three grains ; what must then be
the

the produce? Opium is now twenty-two shillings the pound.

I am, &c.

(Signed)

JOHN BALL."

WILLITON, 2d June 1795.

In a subsequent letter, Mr. Ball states, that the experiment of transplanting did not succeed, not one plant coming to perfection. The pods should be about the size of a walnut before the incision is made. The dried heads from London, being three times as big, must afford much more opium.

In another subsequent letter, Mr. Ball acquaints the Society, that double or semi-double poppies gave more than twice of what is collected from the single. One poppy, which had twenty-eight heads, afforded above thirty grains of opium. It was of the semi-double kind, and the opium was of a better quality than from single heads. The article closes with three letters of testimonies, namely, from Dr. Latham, Dr. Pearson, and Mr. G. Wilson of Covent-Garden, who all agree, that the English is at least equal in its efficacy to the best foreign opium.

An account of works in hand, of deaths of eminent men, and a list of new books, conclude this interesting volume.

ART. XII. *Schola Medicinæ Universalis Nova*, a
GULIELMO ROWLEY.

(Continued from page 58.)

IN our last number we gave a general view of this work, and extracted several curious passages from the history of medicine.

The author divides medicine into Physiology, Pathology, and Therapeutics; and because Anatomy is the basis of Medicine, and paves the way to the knowledge of the healing art, he proceeds in the first place to its consideration.

ANATOMY.

Plate 1. Contains a very elegant male and female figure, drawn by Mr. Edwards of the Royal Academy, and engraved by Sharp, to explain the external parts of the body; and as letters would spoil the beauty of the figures, two reference-plates are placed opposite to the page of description.

Plate 2. The constituent parts of the human body.

Osteology.

Plate 3. Explains the structure, eminences, depressions, and unions of bones, together with drawings illustrative of Osteogeny.

Plate 4. A front view of the skeleton.

Plate 5. A back view of the skeleton.

Plate 6. A view of the bones of the cranium.

Plate 7. A lateral view of the skeleton; a skeleton of the foetus with its peculiarities, and the different species of teeth.

These plates also have their explanations on an opposite page of letter press. The author then gives a short description of each bone. The following extract will give the reader an idea of the conciseness, and perspicuity, observed in this part of the work.

The Frontal bone.

Situation. In the anterior part of the cranium.

Figure. Like a cockle-shell.

Division. Into an *external* and *internal surface*, a *basis*, and *margins*.

Processes.

Processes. On the external surface are,

1. *Tubera frontalia*, which form the sides of the external surface.
2. *Arcus Superciliares*, or superior margins of the orbital cavities.
3. *Spina frontalis externa*, an apophysis upon which the bones of the nose are situated.
- 4 Two *Apophyses orbitales externæ*.
5. Two *Apophyses orbitales internæ*, which constitute the angles of the orbits.

On the internal surface,

1. *Spina frontalis interna*, in the basis of the bone before the foramen cæcum.

Cavities. On the external surface are,

1. *Cavitates duæ orbitales*, which form the superior part of the orbits.
2. *Fovea glandulæ lachrymalis*, in the external angle of the orbit.
3. *Fovea pro trochlea musculi obliqui superioris bulbi*, in the internal angle of the orbit.
4. *Foramen superciliare*, which emits the frontal nerve.
5. Two *Sinus pituitarii frontis*, in the basis of the bone between the two tables.

On the internal surface are,

1. A *Sulcus* in the middle for the longitudinal sinus of the dura mater.
2. *Foramen cæcum*, under the internal frontal spine.
3. *Excisura ethmoidea*, for the reception of the ethmoid bone.

Connection. With seven bones. 1. With the *parietal* bones. 2. With the *bones of the nose*. 3. With the *lachrymal* bones. 4. With the *superior maxillary* bones.

bones. 5. With the *jugal* bones.
6. With the *ethmoid* bone. 7. With
the *sphænoid* bone.

Use. It forms the forehead, and superior part
of the orbit, and contains the ante-
rior lobes of the cerebrum.

Syndesmology.

Under this head our author considers, the External and Internal periosteum, cartilage, the medulla of bones, articular glands, synovia, vessels and nerves of bones and ligaments. We admire here the brevity of description, but by no means think the consideration of the medulla and synovia belong to this section, but that *via trita via tuta*.

The accurate, clear, and concise description of the ligaments cannot but be of infinite utility to students in the dissecting room, and very much assist them in that branch of Anatomy ; which we are sorry to say, is in general, by the want of a book of this kind, too much neglected.

Myology.

This contains the general description of all the muscles ; their divisions, names, origins, insertions, actions, uses, &c. in the same concise manner.

Plate 8. Several drawings exhibiting portions of muscle variously magnified, injected, or macerated, to explain their formation, &c. &c.

Plate 9. A view of the anterior muscles of the body.

Plate 10. A view of the posterior muscles of the body.

Plate 11. The second layer of muscles on the anterior part of the body.

Plate 12. The second layer of muscles on the posterior part of the body.

Plate 13. The third layer of muscles on the anterior part of the body.

Plate

Plate 14. The third layer of muscles on the posterior part of the body.

Opposite to each of these plates is a sheet of letter press, explaining in three columns, under the heads of name and origin, insertion and action, all the muscles each plate exhibits; but as nothing new presents itself upon a subject that has already engaged the attention of so many able writers, we shall only extract the description of the following muscles of the superior extremity; and conclude this section, by giving a few of the author's observations on myotomy, or the dissection of muscles.

Muscles of the Superior Extremity from Plate X.

<i>Name and Origin.</i>	<i>Insertion.</i>	<i>Action.</i>
a. <i>Deltoides</i> ; from the clavicle and scapula.	Near the middle of the os humeri.	To raise the arm, with others.
b. <i>Infra-spinatus</i> ; from the parts below the spine of the scapula.	Into the neck of the os humeri.	To draw the humerus backwards.
c. <i>Triceps extensor cubiti</i> ; from the neck of the scapula, and outer part of the humerus.	Is fixed to the olecranon.	To extend the forearm, and to draw it a little back.
d. <i>Extensor carpi radialis longior</i> ; from the external condyle to the os humeri.	Into the bones of the metacarpus.	To extend the wrist, and bring the hand backward.
e. <i>Extensor digitorum communis manus</i> ; from the external condyle of the os humeri.	On the posterior part of the four fingers.	To extend the four fingers.
f. <i>Extensor ossis metacarpi pollicis</i> ; from the external condyle of the os humeri.	On the outside of the thumb.	To extend the thumb.
g. <i>Extensor primi internodii pollicis manus</i> ; from the ulna and interosseous ligament.	Into the upper part of the first bone of the thumb.	To extend the first bone of the thumb.
h. <i>Extensor secundi internodii pollicis</i> ; from the ulna and interosseous ligament.	Into the last bone of the thumb.	To extend the last joint of the thumb.
i. <i>Extensor carpi ulnaris</i> ; from the external condyle of the os humeri.	Into the bones of the metacarpus, and the basis of the little finger.	To extend the hand backward.
k. <i>Part of the flexor carpi ulnaris</i> ; from the internal condyle of the os humeri.	By a tendon into the os pisiforme and unciniforme.	To bend the hand and to contract it.

Myotomy.

In acquiring the knowledge of the human body, the author observes, proper attention should be paid to the size, figure, situation, connection, structure, and colour of parts; and proper bodies should be chosen according to the various purposes for which they are intended.

For a skeleton, the subject should be above fifteen years old; the bones of those under this age being too tender; for, by boiling or maceration, they easily separate from their cartilages.

To demonstrate the muscles, bodies suffocated or drowned should be preferred.

To exhibit the nerves, macilent, hydropic, and pregnant bodies, and those of lean infants.

For artificial or wax injections, the body should be under fourteen years old; those who have died from a wound, or from gangrene, are improper for this purpose.

Great care, continues the author, should be taken to preserve cleanliness; the body should be washed before the dissection, in cold water, by which theordes are washed away, and the fœtor diminished; which is especially necessary in bodies that have died of particular diseases. The hair, beard, &c. should be removed, the body placed in a cold situation, with sufficient light for dissection. Those parts which soonest become putrid are to be first examined; and the parts cut away, placed in particular vessels. Nothing should be removed, of which the dissector is ignorant; and the examination of one part should be finished, before that of another is begun. More parts should not be exposed at the same time, than can be examined in the same day; if the dissector should be obliged to leave the body, the parts yet cohering should be replaced; wet cloths put between, and the skin drawn over it.

The hands of the dissector should be carefully washed, to prevent the absorption of putrid matter; for

for cadaverous fumes may produce grievous disasters, or be productive of death ; if therefore the cutis of the hands has been abraded or wounded, it ought to be often washed and besmeared with camphorated oil.

The account or history of the parts, the author thinks, should always be read before the dissection takes place : and he recommends the student to consult the writings of Winslow, Heister, Albinus, Monro, Haller, and his (the author's) own work.

In dissecting the muscles, after having cut through the cutis, the fat, glands, nerves, and sanguiferous vessels, should be removed ; the cellular membrane is to be cautiously separated between the tunic and the muscle, in the direction of its fibres. In removing the cellular membrane from the muscles, the dissector should begin at the origin, and proceed towards the insertion ; so that, cutting in a longitudinal direction, it may be separated from the muscle lying under, and thus left annexed to the tendon only. In preparing the muscles for demonstration, the annular and other ligaments should be preserved, the chief nerves running to muscles, as the brachial, crural, ischiadic, &c. are to be removed ; and in order to examine all the muscles of the same body, the author recommends the dissector to begin with the muscles of the abdomen ; to proceed to the flexors of the femur ; then to the muscles of the face, lips, ears, occiput, maxilla, tongue, os hyoides, larynx, pharynx, and uvula ; next to those of the scapula, head, neck, chest, back, and loins ; to the muscles of the humerus, forearm and hand, femur, leg and foot ; and, lastly, to those of the pelvis, parts of generation, &c. By this order, Dr. Rowley thinks the dissector will be enabled to learn their functions and connections, and will lose no time, nor be prevented by corruption of the parts.

Angiology.

General description of the arteries, their figure, structure, colour, branches, number, flexions, anastomoses, terminations, uses, &c.

Then follows an enumeration of the several arteries; plate 19, containing those on the anterior parts; plate 20, those on the posterior part of the body.

*Posterior Arteries of the Body,**From Plate XX.*

<i>Name, Origin, Trunks.</i>	<i>Branches.</i>	<i>Terminations.</i>
a. <i>The occipital artery; emerges under the splenic muscle.</i>	Is distributed through the occiput.	Sends branches to the rectus, oblique, complex muscles, &c.
b. <i>The posterior auricular; a branch of the temporal.</i>	Often arises from the occipital artery.	In the posterior muscles of the ear, the biventer, mastoideus, &c.
c. <i>Dorsalis suprema; mostly from the thyroid artery. The branches are</i>	1. Scapularis. 2. Spinalis. 3. Dorsalis scapularæ.	In the trapezius, splenius, coraco-hyoideus, &c.

Veins. The venal system; their colour, origins, terminations, valves, structure, uses, &c. In what respects they differ from arteries.

Plate 21. The veins of the body *in situ*, executed in a masterly manner, and different in some respects from the Tables of Albinus, Eustachius, or Haller; drawn by *Paillou*, and engraved by *Cooke*.

Absorbents. The system of the absorbent vessels—their history, structure, division into lymphatics and lacteals. Absorbent glands of different parts, their structure, vessels, &c.

Then follows the distribution of the absorbent vessels. The simple, concise, and perspicuous manner in which this is executed, deserves our particular attention; we present our readers with a short extract, as a specimen of the whole.

Absorbents

Absorbents of the Superior Extremities.

<i>Name and Origin.</i>	<i>Course.</i>	<i>Termination.</i>
<i>The basilic absorbents</i> of the hand, from the palm of the hand and little finger.	Run on the back of the hand, with the external and internal ulnar veins.	And go to the brachial or axillary glands.
<i>The cephalic absorbents</i> of the hand, from between the thumb and forefinger.	Accompany the external radial vein.	Enter the glands under the clavicle.
<i>The median absorbents</i> of the hand, from the side nearest the little finger.	Near the external ulnar vein on the back of the hand.	To the glands of the internal condyle of the humerus.
<i>The deep-seated absorbents</i> of the hand are many, and	Ascend those on the right side. —those on the left.	To the axillary glands. To the left subclavian vein.

Plate. 22. The glands and lacteal vessels of the mesentery. A very elegant plate.

Plate 23. A whole figure, exhibiting the absorbent glands of the skin and viscera.

The Doctor then enters on the consideration of the uses of the absorbent vessels and glands ; in which we notice the observations, and opinions, of *Magnus Falconer*, *Sheldon*, *Nuck*, *Haller*, *Wharton*, and *Morgagni* on this subject ; with the appearances, when examined by microscopes, and the calculation of *Lieberkuhn* concerning the villi of the intestines, from which the lymph and chyle are absorbed.

Next follows the method of detecting the absorbent vessels, which are difficult to be found, on account of their exility, and pellucidity ; the author here refers to the well-known labours of *Mr. Cruikshanks*. This department of science is a discovery of the moderns. *Frederick Ruysch* of Amsterdam, the author observes, was the first who gave an elegant figure of the vessels of the human body, and, by his artificial injections, opened a new field for succeeding anatomists. In this section, the names of *Winslow*, *Bartholin*, *Eustachius*, *Harvey* who first employed microscopes in his anatomical investigations, *Regner dee Graaf* who, by introducing the syringe, added new light to the study of anatomy, *Glisson*, *Swammerdam*, *Ruysch*, *Anthony*

Anthony von Liewenhoeck, and *Boerhaave*, are highly distinguished, and their discoveries attributed to each ; in fact, this short introduction to the method of detecting the absorbents, contains, in a great measure, the biography of those eminent men, and conveys much pleasing information. After having given the above observations, Doctor Rowley proceeds to lay down rules for injecting bodies with wax ; in which will be found every thing that belongs to this subject. The *administratio anatomica* and the composition of the injecting materials are next described. The best prescriptions for injections are enumerated at some length ; and the method of macerating and drying of preparations, with the different varnishes used. The section is concluded with the method of making wet preparations ; the embalming of dead bodies, with much agreeable information respecting the Egyptians on this head ; the modern method of embalming ; the *balsamatio sicca* and a description of Ruyfch's method, which, we make no doubt, will be acceptable to our readers ; for he prepared dead bodies with so much art, that they resembled living ones, and preserved them for ages without any change of colour, or appearance. The method of this celebrated man was kept a very great secret until he sold his Anatomical Museum, in the Year 1714, to *Peter the Great, Emperor of Russia*, who transferred it to Petersburg. In this Museum may be seen the Autograph of Ruyfch, of which the following is a translation.

‘ 1. The hypogastrium should be opened ; and two incisions, a finger's breadth in length made in the trunks of the aorta and vena cava, to admit the injecting tubes.

‘ 2. The body is to be placed in cold water, and the blood occasionally expressed from these incisions, for one or two days.

‘ 3. It should then be put into warm water for four or six hours.

4. The

‘ 4. The ceraceous injecting matter should be put into a glazed earthen vessel, and placed on the fire in an iron pot, containing water, and thus liquefied.

‘ 5. A sufficient quantity of cinnabar is to be well rubbed, and mixed with the liquefied matter.

‘ 6. In the winter time suet is best, to which in the summer white wax may be added. Some use wax, turpentine, resin, and oil of turpentine; others spirit of wine, saturated with cinnabar, and when the vessels are filled with this preparation, they pour in liquid wax, to prevent it from returning. But those who employ this method cannot separate the vessels as I do.

‘ 7. When the body has been in warm water four or six hours, it should be taken out, and laid upon a table; two tubes are to be put into the artery and vein, the one directed to the upper part of the body, the other downward. The tubes should be carefully tied, enclosing the vessel in the ligature.

‘ 8. This being carefully done, the body should be again immersed in warm water for a quarter of an hour.

‘ 9. This as it cools is to be removed, and the vessel again filled with a sufficient quantity of warm water.

‘ 10. A syringe filled with heated injection should then be carefully thrown into the tubes, (beginning with the superior tube) until the whole be sufficiently injected.

‘ 11. When the vessels are filled, the orifices of the pipes are to be stopped, and the body put into cold water, until all the injecting matter appears cold; and, lest the cinnabar by its gravity should separate, and thus the parts be coloured unequally, the body should be continually agitated.

‘ 12. When the body is cold, it should be taken out of the water and put into a leaden vessel (*sandapila*) containing the liquid hereafter to be mentioned. The body should be frequently agitated, and the liquid changed several times that the watery part may be more easily extracted.

13. When

‘ 13. When it is proposed to exhibit the body, it must be taken out, clothed, and ornamented in a decent manner; the spectacle will not be disgusting.

‘ 14. The liquid I employ is spirit of wine, or spiritus frumenti; adding, during its distillation, a handful of black pepper, that it may the more intimately enter the muscular parts.

‘ 15. As I cannot preserve the spiritus frumenti sufficiently subtile, I now use a third part rectified spirit of wine, and the rest water. And this mixture I like best.

‘ 16. I use alcohol mixed with pure water, for birds, fishes, quadrupeds, and other animals; but this will not do for the preservation of the human body, because it sooner loses its beauty; for this purpose, therefore, I draw over the spirit by distillation from a tin alembic.

‘ 17. The body that is to be exhibited should not remain any length of time out of the liquid, for by so doing it will lose its splendor.

‘ 18. In the drying of bodies thus prepared, they should be put where the air blows over them; not near a fire, nor exposed to the rays of the sun, lest the ceraceous matter liquefy, and exude from the vessels.

‘ 19. It is difficult to dry and indurate subjects so prepared, on account of their mucus, which is continually rising to the surface. This, however, should be carefully removed with a pencil brush, dipped in alcohol; and repeated occasionally until the mucus shall no longer appear.

‘ 20. During the drying of preparations, they should be carefully preserved from carnivorous animalculæ, which erode the flesh and membranes.

‘ 21. Some species of Scarabei are very hurtful in the months of May, June, and July; but they are rarely found in winter; they also produce a species of pilous animalculæ not less offensive.

‘ 22. When this happens, the preparation with the animalculæ should be immersed in alcohol, which instantly

stantly destroys them; and again exposed to a dry air until it be perfectly dry.

‘ 23. For the sake of more certain preservation, I varnish my preparations over with a varnish made of copal and *ol. spic.*

‘ 24. If it be proposed to demonstrate the minute vessels, the prepared subject should be varnished over with *oleum spic.* or oil of turpentine; then it may be examined by the rays of the sun with good microscopes.

Thus far the celebrated Ruysch.

The preparation of adult bodies in this manner, is well known to Anatomists to be of all things the most difficult; yet in spite of this, our author informs us, Ruysch undertook, at the command of the States General of Holland, to prepare in this way, the dead body of Berkley, High Admiral of England, who was killed on the 11th of June, 1666, in the naval engagement between the English and Batavians. The body was in a bad state when it was given to Ruysch, but he, nevertheless, by his skill, made it a clean, and elegant preparation, which was sent to England.

Adenology.

The doctrine of the glands; with an enquiry into the knowledge of the Antients, in this part of Anatomy, continued down, attributing to each his discoveries, to the present time. In this history the author has brought forward, in a brief manner, the knowledge and opinions of Homer, Hippocrates, Malpighi, Boerhaave, Morgagni, Mannius, Ruysch, Nuck, Vieussenius, King, Grew, Peyer, Albinus, Ferrein, Michellotus, Haller, Hewson, Hunter, and Cruikshanks.

The description of the glands is short and divided into those of the head, trunk, and extremities.

(*To be continued.*)

ARTICLE

ARTICLE XIII. *Medical, Philosophical, and Vulgar Errors, of Various kinds, Considered and Refuted.* By JOHN JONES, M. B. Octavo, 213 pages, price 6s. CADELL and DAVIES, London, 1797.

A MORE fertile field of both amusement and instruction, can perhaps hardly be found, than the one our author has chosen to employ those hours of leisure, which sickness and confinement had occasioned. He thought justly, that he could not be better engaged, than in breaking a spear against such deep-rooted medical errors, as have been permitted to travel down to us from time out of mind, as matters of unquestionable veracity. It is no inconsiderable step, he observes, in favour of science, to bring ourselves to doubt of the reality of some facts advanced for truth, not only by the ancients, as from their own knowledge, but by some moderns also, in spite of the celebrity of their names. From the various remarks of the author, we shall, for the entertainment of our readers, if not for their instruction, give a few of the most striking.

‘ These instances, as I had naturally a narrow swallow, and being no Roman Catholic, have not been in the habit of crediting marvels, have given me an utter disrelish for marvellous cures performed, even by men of eminence, though attested also by men in high stations ; insomuch that I find great difficulty in giving implicit credit to Sir Kenelm Digby’s wonderful success from his sympathetic powder, though attested by his friend the great Lord Herbert of Cherbury ; which, by being only simply rubbed on the sword, which gave the wound, cured the dueller whose body it had run through, without the painful probings and dressings of a surgeon, or the least confinement. I have also a great backwardness in giving credit to Greatorex’s cures, and the French impostures

tures of animal magnetism. As for that beautiful experiment, in proof I suppose of his doctrine, that blood has life in itself, which John Hunter contrived, equal to any of Taliacotius's, of transferring a cock's spur from his leg to his head, and making it grow there ; I am sure I have no reason to object to it, as I won a wager that it was not true, which a gentleman paid me freely, upon its having been omitted in a subsequent edition of the quarto Treatise on the Teeth. Though the transplantation of a cock's spur, when successful, appears not to be attended with sufficient advantage to encourage the practice ; that most ingenious experiment, recorded in the Berlin Medical Memoirs for the year 1778, of hatching chickens in forty-eight hours by electricity, not only saves the poor hen nineteen days painful attention, but might turn out a most beneficial article in trade, and reduce the price of poultry, which is at present enormous, if it succeeded here.

‘ Notwithstanding the above strictures, as I myself have a propensity to a little whimsicality, I am ill-disposed to sneer at any medical *jeux d'esprit* ; though they may happen not always strictly to answer the ardent wishes of their projectors ; from a conviction that the laugh of the unlearned at a first project may at times have proved detrimental to science, by so cramping a man of genius in his ardour for improvements, as to intimidate him from making a second attempt, who with a little encouragement might have succeeded better in subsequent trials.

‘ Under this predicament, as simple a scheme as any was that of the celebrated Leuenhoek, planned for the preservation of his own health, who had such remarkably good eyes, and was so much accustomed to make microscopical observations, that he discovered the small vessels or pores through which insensible perspiration is carried on, which open sideways under the *cuticle*, of such minuteness that 100,000 of them might be covered, he assures us, by a single grain of sand,

land ; yet his apparatus did not cost him a penny, being a single microscope made by holding a small glass wire in the flame of a candle, till it melted into a little round globe, which he afterwards placed in a hole made to fit it by a pin in a thin bit of stick. With this he was enabled to make greater discoveries than any subsequent philosophers with their very costly microscopes, which, though they magnified, darkened the object at the same time.

‘ He pricked the back of his hand with a pin, when in perfect health, for a drop of blood, which he carefully inspected through his microscope ; the exact consistence of which he noted down, to serve for a standard in a scale to measure any future aberrations from, upon the access of any future illness. Thus prepared, when for example, he found it necessary upon the approach of some disorder, to inspect the state of his blood, he pricked his hand as before for a drop, which he carefully compared with the note of his former standard, from which he formed his indication of cure. If he found that the *crassamentum* exceeded in its proportion, he lived pretty much upon weak sops, tea, weak coffee, lemonade, imperial, and the like ; and, on the contrary, when he observed an excess in the serum, he thickened it by drinking a decoction of Peruvian bark, and a glass of Port now and then. And I make no doubt, had the virtues of Priestley’s airs been discovered in his time, but that Mynheer, towards the completion of his scheme, by a careful and judicious observation of the blood’s colour also, and its variation in different disorders, would have added to his Pharmacopœia, the three articles of Azotic, Hydrogene, and Oxygene airs, to remedy all its aberrations in that respect also ; for example, if, (as it is natural to suppose in a torpid Dutch habit) the blood should happen to exhibit too much of a dark scorbutic red, he would only have had to snuff up a few nostrils-full, now and then, of Oxygene air, to quicken the circulation, and
give

give it a beautiful pink. If, on the other hand, it appeared too pinkey and florid, he would only have had to lower it with *quant. suff.* of Azotic or Hydrogene, till it should be reduced to its natural healthy standard, crimson.

‘ *That a physician just called to a Patient ought, as soon as he comes down Stairs, to inform the Family of the Name of the Distemper.*

‘ This, in which the credit of the apothecary is greatly involved, who from his earlier attendance, may possibly have been rash enough to give it some name, may not unfrequently happen to be a very difficult question; till the doctor has had sufficient time to discover it by a most sedulous attention to its various, and possibly complicated appearances. And it may not unfrequently happen, even after the determination of the disorder, that he may never be able to bring all its variations to answer exactly to any species the very fancifully-inventive class-maker may have established. How much, for example, would one be to be pitied, whose reputation, when desired to look at a sore eye, were to be estimated, and depend upon his being able to specify identically which of old Chevalier Taylor’s 134 disorders of the eye, as delivered in his Lectures, the present was; many of them, probably, as difficult to discriminate as any of Captain Cook’s newly discovered rocks and headlands. Moreover, if the distemper be a fever, how often are fevers, which in their access are inflammatory, found to become in their progress nervous; or putrid intermittents to become remittent or continual: and *vice versa*? so that like the man’s account of the wind at *Maker’s Tower*, the physician’s account may daily shift and vary. And indeed, after all is over, precisely to distinguish between the peculiar symptoms of the disorder, and those probably owing to the medicines made use of, is no very easy matter; for the putrid water, for example, and corrupted juices dis-

charged by stool in any illness where scammony has been much used, is by no means a proof of the previous existence of those humours; for scammony given to the healthiest person will dissolve the blood into a putrid water, and waste the whole body by its repeated use; the healthy juices being first corrupted by the virulency of the medicine, and then discharged.

‘ Lecture-reading class-makers often find great trouble (so there is in splitting a hair) in those distinctions without a difference they make in their minute divisions and subdivisions of fevers; with the view, probably, of appearing sapient to their pupils, rather than any real use they can possibly tend to. Probably the truth may lie between these, and a late writer, who, with an ingenuous unassuming diffidence, ventures to prove, that of fevers there exists but one sort only; attributing all the variations in their symptoms to the different idiosyncrasies of patients, seasons, treatment, &c. &c. And what strengthens this gentleman’s opinion not a little is the known fact, that two people never had exactly the same symptoms in any fever. Mere speculation, indeed, seldom does any good in physic, or even in philosophy or divinity; had a learned prelate, whose business only it was to prove to us the reality of the demoniac miracle, saved himself the needless pains he took to puzzle himself and his readers, in calculating to a scrupulous nicety the number of devils and half-devils allotted to each pig; our belief, taking the whole in the lump, as the inspired apostle relates it, would have been equally strong, and the bishop would have escaped much derision.

‘ There are very few visitors of the sick who do not kindly press the infirm person, though attended perhaps by a physician or two of great skill, to make a trial, in preference to his present medicines, of some very innocent thing; which, from their own know-
ledge,

ledge, they assert has been of the greatest benefit in just such a similar case.

‘ The first mistake of the busy interfering lady or gentleman may be, (and a very dangerous one it is,) in the *similarity* of the case. A second may be, that this innocent thing, except it be purely an article of food, can be of any use at all; none of our choicest medicines being innocent things when improperly applied. To a person of a tender face who must be shaved, can it be any recommendation of a razor, that it is as innocent as a lath, which can never be too keen in the hands of persons well skilled in its management? And if by any innocent thing be meant a medicine slow and weak in its operation; is it certain that the disorder may not gain a march upon it, by this trifling procrastination, and great loss of time; and this innocent nostrum be thus actually converted into a poisonous one, for in many cases *non progredi est regredi*? Another error may possibly be, that the art of physic is either universally innate in mankind; or, at least, is so very easily attainable, that scarcely any body is ignorant of it except physicians themselves. If so, what incorrigibly egregious dunces must the regularly educated physicians be, who, after the best classic education, study physic in each of its numerous branches with every advantage for many years at Oxford or Cambridge, completing the whole with a year’s attendance upon the most reputable professors and hospitals in London; if after all they are not supposed to be even upon a par with the generality of other people, who pretend not to have profited by any of those advantages.

‘ To confess the truth, our brethren the Urine Prophets, and Animal Magnetisers, shew abundantly more good sense than any of us; as, without the least expence, they create themselves Doctors by inspiration; without pretending the least assistance from learning, or its equal substitute a Scotch *diploma*. And as long as the fools in this credulous nation con-

tinue so greatly to out-number the wise, they will never fail of getting into very lucrative practice, and rapidly making their fortunes.

‘ As government at present perfectly acquiesces with any persons practising physic, who can find people weak enough, and willing to be practised upon; Oxford seems to have no great desire to concern herself much in the matter, Divinity and the Civil Law being her staple commodities. The thing which affects her interest most is her young sister Cambridge opening a private bridle road, to the left of the old turnpike one, to let in country curates, and undersell to them Bachelor of Divinity degrees; without keeping terms; and without any previous examination into, or knowledge of, their learning. Had Oxford been politic enough to have elected Mr. Pitt for one of its representatives, he might probably, in return for that honour, have befriended her by inserting a clause in his act against smuggling, against so clandestine a practice, so injurious to the fair trader, the elder *Alma Mater*. As matters now stand, I know not what my much respected old nurse can do better than to open a similar postern wicket, and, like play-houses, after the third act, let in country customers at half-price.’

That icterical Persons see every Thing yellow.

‘ Though it be a common poetical allusion to see things with a jaundiced eye; and though this circumstance enters into the great Sydenham’s definition of this distemper; I have seen numerous patients icterical to the greatest degree, yet never knew one who did not see objects in their natural colour.’

That it is necessary to drink plentifully of water-gruel, or some warm diluting liquor, to assist the operation of a purging draught.

‘ The palpable error here is using that as a mean for promoting its operation, which has a tendency on the
contrary

contrary to weaken it. When in dropfies a very quick smart purge is intended, care should be taken to forbid the patient drinking any thing which may dilute away its strength. What, in my opinion, may have given the first rise to this practice, must have been an attempt, by a great rush of some mild warm liquor, to dissolve and dislodge such hard aloetic pills, or substances of an acrid, insoluble, adhæfive quality; which, by sticking fast to some part of an intestine, like shoe-maker's wax, may have caused violent painful gripings by their inflaming, fretting, and penetrating the part. This mode of relieving the patient not having been clearly understood, as to its operation, has continued to be fashionable, gripe or not gripe; even when the cause requiring it did not exist; as in Glauber's salt, or any other so soluble and miscible with the *gastric*, and *enteric* liquors it had to meet with in the *primæ viæ*.

‘ I will risk my reputation in being the first person that ever set his face against a very great absurdity, which has hitherto never been suspected of being such, viz. an absolute necessity of a very strict regimen, and making a wonderful fuss about confinement to one's warm room, and clothing one's self much warmer than usual, on the day a purge is taken. Whereas, (mercurials alone excepted, whose nature it is to be determined by cold weather with violence upon the glands of the throat) I affirm, that a person living, and clothed as usual only, is much less liable to take cold, and to suffer from it, than upon any other days.

‘ I have twenty times swam in the Isis, and so have many others, on the afternoons of those days, on the forenoons of which we had taken an ounce or two of Glauber's salt in *Holy-well* water. And in a course of sea-bathing, I have often directed many, after purging in a morning with sea-water, to bathe in it on the evening of the same day. The reason why no harm can possibly happen from this practice I conceive to be this; that Nature never at the same time

works by directly contrary ways ; never plays fast and loose ; never opens the perspiratory and sudatory vessels, and closes them also at the same time.

As the purge, by its action upon the intestinal glands, and those of the stomach, and upon all the neighbouring vessels, (as also upon that universally pervading Lymph, the existence of which Le Cat says he has discovered,) brings a flux of humours into the intestinal canal ; cold, by its constringing all the vessels of the external surface of the body, would most evidently tend rather to promote the flux, and operation of the purge, than check and impede it. And, perfectly agreeable to my doctrine, we find that warm diaphoretics, which, by a copious sweat, determine and throw out the acrid humours from the intestines in violent dysenteries upon the external parts, become the most efficacious medicines of any ; *per contra* also, in the most dangerous constipations, when no art or medicine has been able to loosen the bowels and procure a motion, setting the patient to stand naked upon a cold marble hearth, and dashing cold water by pail-fulls against his *abdomen*, has often most happily succeeded ; and to the admiration of his friends snatched him as it were from the very jaws of death.

That Earths and Boles are of the greatest use in correcting acidities in the stomach of Infants.

‘ I think them very dangerous ; for if there should be no acid juices in their stomachs, these are apt to concrete with the mucous matter lodged there into hard indissoluble masses, so as to line the stomach with a crust capable of obstructing the gastric liquor’s passage into it ; and also of closing the orifices of the lacteals, so as to obstruct the passage of the chyle through them into the blood.*

* This is surely fanciful enough ! This and a few other instances, which we could select from the present performance, might perhaps not unaptly be added to the author’s list of Medical and Vulgar Errors.

‘ Some have endeavoured to controvert this opinion by this exception: After a solution of these earths well triturated, in water (wherein was no acid), had been made, and passed through filtering paper, a portion of a whitish earthy matter has been found, capable enough of passing through the *lacteals* into the blood. The inconclusiveness of this proof will appear by the consideration, that this *residuum* was supplied solely from earth naturally contained in the water used, and not at all from the earth made use of in the experiment; for if pure water distilled had been made use of, though ever so long triturated and digested with the earth, it would have left no *residuum* at all.

That the influenza is a very dangerous distemper, and a new one; never known in this country till a few years ago; at which time the College, by their circular letters, cried out for help from all quarters; were themselves greatly alarmed; and spread a general terror.

‘ It is neither a new nor a dangerous distemper; every person going out of a warm room, and riding, by night, against a sharp easterly fog, who had not prudently guarded his nose and mouth from it by a thin soft handkerchief, must have caught it; and so may any one in such circumstances catch it; whether under the new name of influenza, or the old common one of catarrh.

‘ The present, styled the age of dissipation, may, in my opinion, have pride and pedantry very properly added to the bill. Ask the dirtiest, most ragged child you see playing upon a dunghill, whose child he is; you are answered, Mr. Such-a-one’s. *Master*, formerly a title of eminence, is now worn and assumed by the very lowest of mankind; there are no *women* to be had at present; even those at a two-penny puppet-show of a country village, forsooth, are all called the *Ladies*. Though at present we cannot

pretend to be advanced in stature above former times ; yet we distance them far in our affectation of dignity, pomp, and consequence. Such is our improvement in philology also, that since a travelled fine gentleman has been pleased to dub a common cold, which seized him in his return from a warm climate over Mount Cenis, with a foreign name of influenza ; all our catarrhus colds, amongst our gentry, have assumed the same name and importance ; except amongst serious aged people ; who hardly think it worth while to new-model their language, when they catch it, snivel and drivel it off under its former name. In the commutation of terms, sufficient care is at present taken not to exchange for the worse ; formerly *vomits* and *purges* were in use, they are now superseded by *emetics* and *opening medicines* ; *boils*, which a servant maid was formerly used to poultice and open with a pin, are now a *tumour* matured by *cataplasms*, and to be lanced as an *abscess*. There are now no *apothecaries* ; they are all *surgeons* ; and these all *physicians*. There are now no *ensigns* and *lieutenants* ; they are all *noble captains*. Let a ball, in very sultry weather, be ever so much thronged, nobody now *sweats*, though large drops continually trickle down their faces, and require the constant application of handkerchiefs ; the company only *perspire* freely, though every one knows perspiration to be insensible, and not to be seen. No lazy, greasy, fœtid, over-fed gentlewoman, is at present *fat*, though of the full weight and admeasurement of Dolly Crampton, cook at the George ; the lady is only *jolly*.

‘ No street-walkers, though half rotten, confess themselves *infected* ; they are only *injured*. No fribble officer, pale, and trembling through fear upon being ordered into battle, has now the courage of Sir John S—ck—ing bravely in the face of his country to call it *cowardice* ; no, he only complains of having naturally *bad nerves*.

These

‘ These may be allowed to be trifling instances of pedantic folly ; but that it should infect a great assembly, whom we were in the habit formerly of looking up to as patterns for style and every ornament of speech, is really lamentable ; as we now can have no pleasure in reading the speeches, because we do not understand them. We know what a man, bred a scholar, meant when he said *he would not commit a fault* ; but never when he said he would not *commit himself*. We knew what a man meant when he said he was *bound to declare* the truth ; but when he said he was *free to declare it*, we lost him again, unless the gibberish of *bound* and *free* meant the same thing, which we well know to be contradictory terms.

That to cure a fractured patella it is absolutely necessary to bring the fractured ends together, and firmly to secure them in that posture with pasteboards and firm bandages, and a long confinement in bed.

‘ I remember a case brought before the ingenious Mr. Samuel Sharp at Guy’s Hospital, of a woman carrying on her head a heavy pail, who by a fall broke both the patellas. This afforded him an opportunity of declaring to his pupils, that he would not set one of them, from the numerous bad consequences he had often ~~seen to attend~~ such practice in others, such as a ~~stiff~~ knee, if not an anchylosis for life, and its very great aptitude again to break ; whereas ~~he~~ affirmed that no ill consequence of any kind can happen from leaving it entirely to nature. He therefore earnestly exhorted his pupils to set such a value on their characters in private practice, as to put it out of the power of ill-wishers, to accuse them of gross ignorance, or, what is worse, condemning their patients to a tedious and a painful confinement for the sole lucrative purpose of charging them for an operation and long attendance, while they must in conscience be perfectly convinced that all they do is
not

not unnecessary only, but generally mischievous to a great degree.

That green and bohea tea are the leaves of one and the same tree ; differing only from the different seasons of gathering them, and the different ages of the trees.

* These trees are of late become so common in our gardens that they are well known to differ remarkably from each other. The bohea is a very tender shrub, which requires a greenhouse in winter, and is perfectly distinguishable from any other teas by its berries. But the green is a hardy shrub, and will stand the weather in our climate, and live out with our gooseberry trees. The relaxing quality of the infusion of teas proceeds from our drinking it hot, if it be made weak, particularly the green ; for when this is made strong and drank cold, it is a remarkable astringent, and when very strong proves emetic. The Chinese, who must be the best judges of the qualities of teas, make use of bohea only for their own drinking, of which a sufficient quantity for the whole day's beverage is made in the morning, and carried out with them to their rice ground, or other employments ; which they always drink cold, and without sugar ; they do not infuse it after our manner, but boil it in a tea-kettle, (using tea-pots only as strainers,) probably the better to evaporate the fine smell of their best teas, which are said to have an intoxicating quality, unless they are kept a year or two before they are used.

* A more convincing proof of the deleterious quality of our fine green tea can hardly be conceived than Dr. Percival's. He confined, by a little weight of lead upon his back, a frog upon the rim of a saucer full of green tea, of the heat and strength which our ladies are accustomed to drink it, in such a manner, that one leg should lie in the tea, which soon became paralytic ; he then, in like manner, tried another leg, which

which suffered alike ; and so on with the rest, to that degree that the animal could not make the least use of either of them.

‘ The mode of manufacturing their teas is said to be as follows : the leaves, when gathered off the trees, have a caustic oil upon them ; to take off which, they infuse them in water for some time ; after which they with their hands roll the green tea leaves upon copper-plates, heated by a stove underneath. The small remains of the acid oil, still adhering to them by its corroding the copper, is thought to communicate to it the green colour which the English look upon as the test of its goodness. The bohea not bearing so good a price in Europe, though dearer in China, is rolled on a common table with less care, and afterwards dried by stirring it in heated iron pots, with as little trouble as may be ; a little tinge from the iron may probably be one reason for its greater healthfulness, and the cause of its colour ; and as it is so cheap, there is not the same temptation to adulterate it. The dealers in London, after buying a lot of green tea, spread it upon a long table, and employ women to pick and separate it into several different sorts, as to the colour and size of the rolls, &c. to which they afterwards give what names they think proper, as hyson, imperial, cowslip, &c. &c. However, towards cowsliping a portion of the former to enhance its price, one or two drops of *otto* of roses is added to a canister of it, to give it the fine smell it is admired for. What tree, or contrivance, produces what is called fouchong, I have not learnt : all we know of it is, that it differs much from bohea, as it has no berries in it, and often makes people sick whom the bohea perfectly agrees with.

That the smell of a lime-kiln preserves people from consumptions ; and that pregnancy has the same effect.

‘ I fear neither assertion is true ; because I knew a woman,

woman, of about thirty years of age, who was attended before and after pregnancy by an ingenious physician, in a consumption, who died of it some months after her delivery, though she was born, and always lived as near as possible to eleven lime-kilns in constant work, during the season, the farthest not 200 yards from her house. An unmarried girl, her next door neighbour, died also consumptive.

ARTICLE XIV. RUSH'S *Medical Inquiries and Observations*. Vol. IV.

(Continued from page 100.)

IN our last number we gave the History and Appearances of the Epidemic Fever which prevailed at Philadelphia in the year 1794. We are next to notice the method of cure. This, however, will not detain us long, as it was for the most part similar to the one the author pursued with so much success, the preceding year. It consisted, 1st. in the abstraction of the stimulus of the blood, and heat, from the whole body, and of bile, and other acrid humours from the bowels, by means of bleeding, purging, cool air and cold drinks, and cold water applied to the external parts of the body, and to the bowels by means of glysters.

2. In creating a diversion of congestion, in inflammation, and serous effusion, from the brain and viscera to the mouth, by means of a salivation, and to the external parts of the body, by means of blisters.

3. In restoring the strength of the system, by tonic remedies.—On each of these heads the author makes his particular remarks.

With respect to blood letting, a table is annexed, which marks the quantity of blood taken, in twenty three instances of the fever, and the number of times the

the

the patients were bled. The quantities varied from 50 ounces, (the smallest quantity) to 150 (the largest). The number of bleedings were from five to fifteen. From several of them, Dr. Rush, observes, the quantity let down was taken in three, four, and five days. He has omitted the names of above one hundred persons who had the fever, from whom he drew 30 or 40 ounces of blood by two or three bleedings. And he observes further, that he did not cure a single person without at least one bleeding.

The appearance of the blood drawn was very various. In some instances it was dissolved; the serum sometimes red, at others of a deep yellow. Towards the crisis of the fever in many people the blood exhibited the usual form of inflammatory crust. It was cupped in many instances.

Purging was produced by jalap, gamboge, and calomel, the latter in large doses; 150 grains being given in one instance in the space of six days.

Salivation was excited as early as possible in all those cases which did not yield immediately to bleeding and purging. The effects of it were to attract and center in the mouth, all the scattered pains of every part of the body. It checked nausea and vomiting. It gradually, when it was copious, reduced the pulse, and thereby prevented the necessity of further bleeding or purging.

The effects of blisters, the author observes, were very similar to those of salivation. The time in which they are applied, however, requires particular attention. When applied in a state of great arterial action, they do harm; and after that action has nearly ceased, they do little or no service. The time of applying them was, when the fever was so much weakened by evacuations, that the artificial pain excited by their stimulus destroyed, and, like a conductor, conveyed off, all the natural pain of the body.

The only restoratives employed after the reduction of the morbid action of the blood vessels, were a nourishing and gently-stimulating diet.

Bark

Bark was found ineffectual in the practice of Dr. Rush, and that of several other physicians: in many instances it evidently did harm. Colombo, and other bitters were equally useless.

Wine was found hurtful in every case in which it was given, while there were any remains of inflammatory action in the system. Opium in small quantities was useful after the fever had passed the seventh day, and had been so far subdued by copious evacuations as to put on the form of a common inflammatory intermittent. It was given in the intermissions. Where it did no service, it did not, like the bark, do any harm.

Antimonials and nitre were entirely ineffectual in abating the action of the sanguiferous system, and in producing a sweat.

The efficacy of this method of treatment, the author observes, was established by almost universal success. He lost only four patients of upwards of two hundred, and the loss of these he attributes to blood-letting not having been carried sufficiently far.

The antiphlogistic treatment, Dr. Rush observes, was not successful in Philadelphia alone. It was equally so in New Haven, Baltimore, and Charlestown. In the Island of St. Vincent also it was successfully employed. In Jamaica purging has been preferred to blood-letting.

The author again complains of having suffered much unmerited obloquy and reproach from his fellow-practitioners; who, as on the former occasion, attempted to deny the truth of his statements, and even the existence of the disease.

‘The number of persons,’ says he, ‘who have died under my care has been much exaggerated, and the most affecting stories have been circulated of their dying under the immediate use of my remedies. A single death where bleeding had been used without success, has injured my reputation more than twenty deaths created by the neglect of it, or by the improper

per use of tonic remedies, have injured other physicians. Nay, further, the paleness which is induced by bleeding, has in a single instance, been urged with more success to discredit my practice, than a dozen deaths would have been, had I confined myself to the usual remedies for fever. The reader will conceive of the horror with which my practice of bleeding in this fever is viewed, when I add, that a lady who visited one of my female patients whom I had bled several times, implored her upon her knees not to permit me to bleed her any more. Her prayer had no effect. I bled her frequently afterwards, but that she might not be disturbed by a repetition of the entreaties of her friend, I concealed the blood, at her request, each time after drawing it in a closet, nor was it known that I did so, until some time after her recovery.

‘ I commit the calumnies which have followed my opinions and practice in this fever, to the dust. If the soil, I have endeavoured to cultivate, should afford a plentiful harvest to my pupils, I shall not repine, although I have reaped nothing from it, but briars and thorns. And if my labours upon this subject should be blessed to the conviction and benefit of the citizens of Philadelphia, I shall rejoice in my persecutions.’

This concludes the Subject of the Yellow Fever. The author, in the next place, enters on the consideration of the PROXIMATE CAUSE OF FEVER. The doctrine here laid down is what he has publicly taught, and which has regulated his practice for many years. Of this, we shall now attempt to give an epitome.

He premises, that Fevers of all kinds are preceded by general debility, either direct or indirect. This is inferred from their remote causes, all of which tend to weaken the system; from the *time* in which fevers commonly attack, viz. in the night, when the system
is

is in a state of debility ; and from the symptoms which accompany the attack.

2. Debility is always succeeded by increased excitability, or a greater aptitude to be acted on by stimuli. This increase of excitability is said by Dr. Brown to be confined only to a state of direct debility ; but, according to Dr. Rush, it takes place in all cases of indirect debility, where it is *suddenly* induced upon the system. Indirect and direct debility are upon a footing, where they are of a chronic nature. They both equally expend the excitability of the system, and leave it in a state in which stimuli generally act with too little force upon it to excite in it the commotions of fever.

3. The diminution or abstraction of one stimulus is always followed by the increased action of others.

That the increase of excitability is the predisposing cause of fever is evident, the author thinks, from their occurring in those stages of life in which this disposition to preternatural motion is most common, as in infancy, childhood, youth, and middle age.

4. ‘ The stimuli which are the remote or exciting causes of fever, act in a manner wholly different from what they do, upon a body in which there is no predisposition to fever. In health there is a constant and just proportion between the degrees of excitement and excitability, and the force of stimuli. But this is not the case in a predisposition to a fever. The ratio between the action of stimuli and excitement, and excitability is destroyed ; and hence the former act upon the latter with a force which produces irregular action, or a convulsion in the arterial system. When the body is debilitated, and its excitability increased, either by fear, darkness, or silence, a sudden noise occasions a short convulsion. We awake in like manner in a light convulsion, from the sudden opening of a door, or from the sprinkling of a few drops of water in the face, after the excitability of the system has been accumulated by a night’s sleep. In a word, it
seems

seems to be a law of the system that stimulus, in an over proportion to excitability, either produces convulsion, or goes so far beyond it, as to destroy motion altogether in death.

5. The stimuli which induce the irregular action or convulsion of fever, act, for the most part, primarily upon the sanguiferous, and particularly upon the arterial system. The arteries pervade every part of the body, and terminate on every part of its surface, in which I include the lungs and alimentary canal, as well as the skin. It is from this circumstance, that they are so easily affected by cold, heat, and all the other remote and exciting causes of fever. I need not pause to prove that the blood-vessels possess muscular fibres, and that their irritability, or disposition to motion, depends upon them. This has been demonstrated by Dr. Vasschuer and Mr. John Hunter by many experiments. Dr. Boerhaave admits it in the history he has given in his Institutes, of an ox that was killed immediately after it had been violently heated by running away. The coats of its arteries were suffused with blood, in consequence of inflammation. Even Dr. Haller, who denies the muscularity and irritability of the blood-vessels, implies an assent to them in the following words: "There are nerves which descend for a long way together through the surface of the artery, and at last vanish in the cellular substance of the vessel, of which we have a specimen in the external and internal carotids, and in the arch of the aorta; and from these do not the arteries seem to derive a muscular and convulsive force very different from that of their simple elasticity? Does not this shew itself plainly in *fevers*, faintings, palsies, consumption, and passions of the mind?"

The morbid action of the blood-vessels discovers itself in preternatural force or frequency in the pulsations of the arteries. In this state of the arteries, the stomach, bowels, and muscles, exhibit marks of preternatural weakness; for natural excitement is ab-

tracted from them, and concentrated in the sanguiferous system.

6. There is but one remote cause of fever, and that is stimulus. Heat, alternating with cold, marsh and human miasmata, contagions and poisons of all kinds, intemperance, passions of the mind, bruises, burns, and the like, all act by a stimulating power only, in producing fever. This proposition is of great application, inasmuch as it cuts the sinews of the division of diseases from their remote causes. Thus it establishes the sameness of a pleurisy, whether it be excited by heat succeeding cold, or by the contagion of the small-pox, measles, or yellow fever.

7. ' There is but one fever. However different the predisposing, remote, or exciting causes of fever may be, whether direct or indirect debility, whether heat or cold succeeding to each other, whether marsh or human miasmata, whether intemperance, a fright, or a fall, still I repeat, there can be but one fever. I found this proposition upon all the supposed variety of fevers having but one proximate cause. Thus fire is an unit, whether it be produced by friction, percussion, electricity, fermentation, or by a piece of wood or coal in a state of inflammation.

8. ' All ordinary fever being seated in the blood-vessels, it follows of course, that all those local affections we call pleurisy, angina, phrenitis, internal dropy of the brain, pulmonary consumption, and inflammation of the liver, stomach, bowels, and limbs, are symptoms only of an original and primary disease in the sanguiferous system. The truth of this proposition is obvious, from the above local affections succeeding primary fever, and from their alternating so frequently with each other. I except from this remark those cases of primary affections of the viscera which are produced by local injuries, and which, after a while, bring the whole sanguiferous system into sympathy. These cases are uncommon, amounting probably to not more than one in an hundred of all the

the cases of local affection which occur in general fever.'

Having premised these general propositions, the author goes on to remark, that a fever (when not misplaced) consists in a morbid excitement and irregular action in the blood-vessels, more especially in the arteries. This morbid excitement, or irregular action, manifests itself to the fingers, when pressed upon the radial artery, by preternatural fulness, force, and frequency, or by preternatural slowness, intermissions and depression in what are called inflammatory fevers, and by preternatural frequency without fulness or force, in what are called typhus fevers.

This irregular action of the arterial system, the author terms *convulsion*, from a supposed analogy between the symptoms of fever, and convulsions in the nervous system: as this, however, does not appear to us very striking, we shall not follow him in his comparison.

The author's theory of fever, then, resolves itself into a chain, consisting of four links. 1. Predisposing debility, or weakened excitement of the blood-vessels. 2. An increase of their excitability. 3. Stimulating powers applied to them. And 4. Irregular action or convulsion, which constitutes the proximate cause.

Dr. Rush, in the next place, inquires, how far the theory accords with the phenomena of fever. Lassitude, chillness, tremors, want of appetite, vomiting, and the other symptoms of the early stage of fever, all indicate, he thinks, debility of the parts immediately affected. He then endeavours to explain, why excess in the force or frequency of the action of the blood-vessels should succeed debility in a part, or in the whole of the body, and be connected for days and weeks with preternatural debility in the muscles, nerves, brain, and alimentary canal. In many instances, he observes, both in body and mind, as well

as in fever, there is a great disproportion between the stimulus and the consequent action. A grain of sand in the eye excites violent and long-continued inflammation: and a single castor-oil nut has produced a vomiting which lasted for 24 hours.

From the view I have given of the state of the blood-vessels in fever, the reader will perceive the difference between my opinions and Dr. Brown's upon this subject. The Doctor supposes a fever to consist in debility. I do not admit debility to be a disease, but place it wholly in morbid excitement, invited and fixed by previous debility. He makes a fever to consist in a change only of a natural action of the blood-vessels. I maintain that it consists in a preternatural and convulsive action of the blood-vessels. Lastly, Dr. Brown supposes excitement and excitability to be equal in fever. My theory supposes a fever to be the reverse of this. It consists in unequal or divided excitement and excitability. Health consists in the equality and uniformity of them both; and the business of medicine, as I shall say hereafter, is to equalize them in the cure of fever; that is, to abstract their excess from the blood-vessels, and to restore them to the other parts of the body.'

There is but one fever, the author says. Of course he rejects its artificial division into genera and species. There are marks he observes, which indicate a much greater excess of stimulus upon the blood-vessels, than excess in the force and frequency of the pulse, which characterize inflammatory fever. There are preternatural slowness, intermissions and depression of the pulse, such as occur in malignant fever. He considers the different states of fever, therefore, in the following order according to their inflammatory character, or the force of stimulus which acts upon the blood-vessels:

1. The

1. The plague.
2. The yellow fever.
3. The natural small-pox.
4. The malignant sore throat.
5. The fever from the alternate action of cold and heat on the body, appearing with the symptoms of pleurisy, rheumatism, tonic gout, internal dropsey of the brain, and pulmonary consumption.
6. The measles.
7. Catarrh from cold, and influenza from contagion.
8. The common remitting fever, appearing occasionally with the symptoms of colic, dysentery, inflammation of the liver, and internal dropsey of the brain.
9. The scarlatina, puerpale and hectic fevers.
10. The jail fever.
11. The common mild intermittent.

These vary, however, with climate, season, and habit. He would divide fevers, therefore, 1. into such as affect the whole arterial system, with no, or but little local affection. 2. Into such as affect the whole arterial system, and are accompanied at the same time with evident local affections. And 3. Into such as appear to pass by the arterial system, and to fix themselves upon other parts of the body.

Under the first head are included the malignant state of fever, the gangrenous or putrid, the synocha, the bilious state, the typhus, and all the other varieties which have obtained the name of fever strictly, the hectic, the intermitting, the sweating, the fainting, the burning, and the cold and chilly.

The second head includes those states of fever in which there are local affections, combined more or less with general fever: the intestinal state of fever, as cholera morbus, diarrhoea, dysentery, and colic: the pulmonary state of fever: as the true and bastard pneumony in their acute forms; also catarrh from cold and contagion, and the chronic form of pneu-

mony in what is called pulmonary consumption : the anginose state of fever ; as cynanche inflammatoria, tonsillaris, parotidea, maligna, scarlatina, and trachealis : the rheumatic state of fever : the arthritic or gouty state of fever : the maniacal state of fever : the apoplectic : the phrenitic : the paralytic : the lethargic : the vertiginous : the hydro-cephalic : the nephritic : the hydropic : the eruptive : the hæmorrhagic : the amenorrhagic : the hæmorrhoidal : and the opthalmic states of fever.

The peculiarities in these states of fever depend 1. Upon local debility in the part affected. 2. Upon increased excitability in the part, in consequence of this debility. And 3. Upon the morbid excitement induced in the part, by the stimulus of distension from the blood, and by the effusion of serum, lymph, or red globules in the weakened and afterwards inflamed part.

The third division of fevers, viz. such as appear to pass by the arterial system, and to fix themselves upon other parts of the body, includes, the hepatic state of fever ; as chronic hepatitis : the convulsive or spasmodic state of fever ; as locked jaw, &c. : the hysterical and hypochondriacal states or fever : and lastly the cutaneous state of fever ; as effera, rash, elephantiasis, &c. These states of fever the author terms *misplaced*.

From this view it will be seen, that, in fact, all disorders whatever according to the principles of the author, come to be included under one general head. Disease, he remarks, is as much an unit as fever. It consists simply of morbid action or excitement in some part of the body. Its different seats and degrees, should no more be multiplied into different diseases, than the numerous and different effects of heat and light upon our globe, should be multiplied into a plurality of suns.

Considering

Considering these principles as theoretical merely, they are not of much importance ; but as forming the basis of practice, they are of immense magnitude. That they are the rule and compass of the author, in his treatment of disease, will be seen in the latter part of the volume, entitled *A DEFENCE OF BLOOD-LETTING, AS A REMEDY FOR CERTAIN DISEASES*. We shall now proceed to the consideration of this.

The author begins by enumerating the appearances which indicate bleeding in the inflammatory state of fever, and the advantages which accrue from its adoption. On these heads, practitioners are pretty well agreed ; we need not, therefore, descend to particulars.

He next states, and endeavours to obviate, the objections which have been made to blood-letting in fevers, in some particular states of the system. The principal of these are

‘ *Great apparent Weakness*. This in acute and violent fevers,’ the author observes, ‘ is always of the indirect kind. It is induced by pressure upon the sources of strength in the muscles. It resembles in so many particulars that weakness, which is the effect of the abstraction of stimulus, that it is no wonder they have been confounded by physicians. This sameness of symptoms from opposite states of the system is taken notice of by Hippocrates. He describes convulsions, and particularly a hiccup as occurring equally from repletion and inanition which answer to the modern terms of indirect, and direct debility. The natural remedy for the former is depletion, and no mode of depleting is so effectual or safe as blood-letting. But, the great objection to this remedy is when the inflammatory state of fever, affects persons of delicate constitutions, and such as have long been subject to direct debility of the chronic kind. In this state of the system, there is the same morbid and

preternatural action in the blood-vessels, that there is in persons of robust habits, and the same remedy is necessary to subdue it in both cases. It is sometimes indicated in a larger quantity in weakly, than in robust people, by the plethora which is more easily induced in their relaxed, and yielding blood-vessels, and by the greater facility with which ruptures and effusions take place in their viscera. Thus it is more necessary to throw overboard, a large part of the cargo of an old and leaky vessel in a storm, than of a new and strong one. I know that vomits, purges, sweats, and other evacuating remedies, are preferred to bleeding in weakly constitutions, but I hope to shew hereafter, that bleeding is not only more effectual, but more safe in such habits, than any other depleting remedy.

Dissolved blood, and an absence of an inflammatory crust on its crassamentum. I shall hereafter place dissolved blood at the highest point of a scale, which is intended to mark the different degrees of inflammatory diathesis in the system. I have mentioned in the inquiry into the proximate cause of fever, that it is the effect of a tendency to a palsy, induced by the violent force of impression upon the blood-vessels. This appearance of the blood in certain states of fever, instead of forbidding bleeding, is the most vehement call of the system for it. Nor is the absence of a crust on the crassamentum of the blood, a proof of the absence of inflammatory diathesis, or a signal to lay aside the lancet. On the contrary, I shall shew hereafter, that there are several appearances of the blood which indicate more morbid action in the blood-vessels than a fizy or inflammatory crust.

12. *An undue proportion of serum to crassamentum in the blood.* This predominance of water in the blood has often checked sufficient blood-letting. But it should be constantly disregarded while it is attended with those states of pulse (to be mentioned hereafter) which require bleeding.

13. *The*

13. *The presence of petechiæ on the skin.* These, I have elsewhere said, are the effects of the gangrenous state of fever. Dr. Sydenham and Dr. de Haen have taught the safety and advantage of bleeding, when these spots are accompanied by an active pulse. A boy of Mr. John Carrol owes his recovery from the small-pox to the loss of fifty ounces of blood, by five bleedings, at a time when nearly every pock on his arms and legs had a purple appearance. Lewis XIV. was bled five times in the small-pox, when he was only thirteen years of age, and thereby probably saved from the grave, to the great honour and emolument of the single physician who urged it against the advice of all the other physicians of the court. Dr. Cleghorn mentions a single case of the success of bleeding in the petechial small-pox. His want of equal success afterwards, in similar cases, was probably occasioned by his bleeding too sparingly, that is, but three or four times.

The following cases illustrate the good effects of blood-letting, in removing pain, and the preternatural slowness, and weakness of the pulse, when produced by this remedy.

‘ In the month of June of 1795, I visited Dr. Say in a malignant fever, attended with pleuritic symptoms, in consultation with Dr. Physick. An acute pain in his head followed six successive bleedings. After a seventh bleeding he had no pain. His fever soon afterwards left him. In thus persevering in the use of a remedy which, for several days, appeared to do harm, we were guided wholly by the state of his pulse, which uniformly indicated, by its force, the necessity of more bleeding.

‘ In the autumn of 1794, I was sent for to visit Samuel Bradford, a young man of about 20 years of age, son of Mr. Thomas Bradford, who was ill with the reigning malignant epidemic. His pulse was at 80. I drew about 12 ounces of blood from him. Immediately after his arm was tied up, his pulse fell
to

to 60 strokes in a minute. I bled him a second time, but more plentifully than before, and thereby, in a few minutes, brought his pulse back again to 80 strokes in a minute. A third bleeding the next day, aided by the usual purging physic, cured him in a few days.

‘ In the month of March 1795, Dr. Physick requested me to visit, with him, Mrs. Fries, the wife of Mr. John Fries, in a malignant fever. He had bled her four times. After the fourth bleeding, her pulse suddenly fell, so as scarce to be perceptible. I found her hands and feet cold, and her countenance ghastly, as a person’s in the last moments of life. In this alarming situation, I suggested nothing to Dr. Physick but to follow his judgment, for I knew that he was master of that law of the animal economy which resolved all her symptoms into an oppressed state of the system. The Doctor decided in a moment in favour of more bleeding. During the flowing of the blood, the pulse rose. At the end of three, ten, and seventeen hours it fell, and rose again by three successive bleedings, in all of which she lost about thirty ounces of *viscid* blood. So great was the vigour acquired by the pulse, a few days after the paroxysms of depression, which have been described, were relieved, that it required seven more bleedings to subdue it. I wish the history of these two cases to be carefully attended to by the reader. I have been thus minute in the detail of them, chiefly because I heard of several practitioners who, I am persuaded, have lost patients by attempting to raise a pulse that had been depressed by bleeding, in a malignant fever, by means of cordial medicines, instead of the repeated use of the lancet. The practice is strictly rational; for in proportion as the blood-vessels are weakened by pressure, the quantity of blood to be moved should be proportioned to the diminution of their strength.’

Bleeding,

Bleeding, Dr. Rush observes, has great advantages over every other mode of depleting. It abstracts one of the exciting causes, viz, the stimulus of the blood from the seat of fever. It is quick in its operation, and intirely under our command. It disturbs the system less; is not attended with immediate danger; is less weakening; and followed by more rapid convalescence.

The circumstances which should regulate the use of blood-letting, are 1st. the state of the pulse.

The following states, the author says, indicate the necessity of bleeding.

1. ' A full, frequent, and tense pulse, such as occurs in the pulmonary, rheumatic, gouty, phrenitic, and maniacal states of fever.

2. ' A full frequent and jerking pulse, without tension, such as frequently occurs in the vertiginous, paralytic, apoplectic, and hydropic states of fever.

3. ' A small, frequent, but tense pulse, such as occurs in the chronic, pulmonary, and rheumatic states of fever.

4. ' A tense and *quick* pulse, without much preternatural frequency. This state of the pulse is common in the yellow fever.

5. ' A slow but tense pulse, such as occurs in the apoplectic, hydrocephalic, and malignant states of fever, in which its strokes are from 60 to 9, in a minute.

6. ' An uncommonly frequent pulse, without much tension, beating from 120 to 170 or 180 strokes in a minute. This state of the pulse occurs likewise in the malignant states of fever.

7. ' A soft pulse, without much frequency or fulness. I have met with this state of the pulse in affections of the brain, and in that state of pulmonary fever which is known by the name of pneumonia notha. It sometimes, I have remarked, becomes tense after bleeding.

8. ' An intermitting pulse.

9. ' A de-

9. ' A depressed pulse.

10. ' An imperceptible pulse. The flow, intermitting, depressed, and imperceptible states of the pulse, are supposed exclusively to indicate congestion in the brain. But they are all, I believe, occasioned likewise by great excess of stimulus acting upon the heart and arteries. A pulse more tense in one arm than in the other, I have generally found to attend a morbid state of the brain. Much yet remains to be known of the signs of a disease in the brain, by the states of the pulse; hence Mr. Hunter has justly remarked, that "In inflammation of the brain, the pulse varies more than in inflammations of any other part; and perhaps we are led to judge of inflammation there, more from *other* symptoms than the pulse."

The flow, frequent, intermitting, and imperceptible states of the pulse which require bleeding, are distinguished from the same states arising from direct debility, or an exhausted state of the system, where bleeding is improper, by the following marks: their occurrence in the beginning of a fever; in the paroxysms of remitting fevers; their occurrence and continuance during the whole course of an inflammation of the stomach and bowels; and their occurrence in relapses, after the crisis.—The other states of the pulse indicate bleeding in every stage of the fever, and in every condition of the system.

In deciding on the necessity of blood-letting, also, regard should be had to the character of the reigning epidemic, as it has been observed that it influences all other diseases which take place at the same time, and even which immediately succeed it. The constitution of the patient, and his previous habits with regard to blood-letting; the country from which persons affected with fevers have lately arrived; and the appearances of the blood drawn, all serve to direct us in this point.

The

The appearances of the blood which indicate the necessity of a further loss, are, dissolved blood, as occurring in the malignant states of fever, shews the highest degree of inflammatory diathesis :—blood of a scarlet colour, without separation of parts :—the crassamentum dissolved in the serum, giving it the appearance of washing of flesh :—crassamentum sinking in yellow serum :—crassamentum floating in turbid serum :—lastly, fizy blood.

Dr. Rush endeavours to shew the safety of blood-letting, when carried to the extent he recommends, by reference to various authorities. He is right in doing this, for probably the greater number of practitioners will be staggered at the idea of following him in his practice.

An ignorance of the quantity of blood which has been drawn by design, or lost by accident, has contributed very much to encourage prejudices against blood-letting. Mr. Cline drew 320 ounces of blood in 20 days from a patient in St. Thomas's hospital, who laboured under a contusion of the head. But this quantity is small compared with the quantity lost by a number of persons whose cases are recorded by Dr. Haller. I shall mention a few of them. One person lost 9 pounds of blood, a second 12, a third 18, and a fourth 22, from the nose at one time. A fifth lost 12 pounds by vomiting in one night, and a sixth 22 from the lungs. A gentleman at Angola lost between 3 and four pounds daily from his nose. To cure it he was bled 97 times in one year. A young woman was bled 1020 times in 19 years, to cure her of plethora which disposed her to histeria. Another young woman lost 125 ounces of blood by a natural hæmorrhage, every month. To cure it, she was bled every day, and every other day for 14 months. In none of these instances, was death the consequence of these great evacuations of blood. On the contrary, all the persons alluded to recovered. Many similar instances of the safety, and even benefit of profuse discharges

discharges of blood by nature and art, might be mentioned from other authors. I shall insert only one more, which shall be taken from Dr. Sydenham's account of the cure of the plague. " Among the other calamities of the civil war which afflicted this nation, the plague also raged in several places, and was brought by accident from another place to Dunstar Castle in Somersetshire, where some of the soldiers dying suddenly, with an eruption of spots, it likewise seized several others. It happened at that time that a surgeon who had travelled much in foreign parts, was in the service there, and applied to the governor for leave to assist his fellow soldiers who were afflicted with this dreadful disease in the best manner he was able; which being granted, he took so large a quantity of blood from every one at the beginning of the disease, and before any swelling was perceived, that they were ready to faint, and drop down, for he bled them all standing, and in the open air, and had no vessel to measure the blood, which falling on the ground, the quantity each person lost, could not of course be known. The operation being over, he ordered them to lie in their tents; and though he gave no kind of remedy after bleeding, yet of the numbers that were thus treated, not a single person died. I had this relation from colonel Francis Windham a gentleman of great honor and veracity, and at this time, governor of the Castle."

' Again. An ignorance of the rapid manner in which blood is regenerated when lost or drawn, has helped to keep up prejudices against blood-letting. A person (Dr. Haller says) lost five pounds of blood daily from the hæmorrhoidal vessels for 62 days, and another 75 pounds of blood in 10 days. The loss each day was supplied by fresh quantities of aliment.'

We have thus given as full a view of the author's opinions, and mode of reasoning, as our limits will permit;

permit ; though perhaps a less perfect one than the importance of the subject demands. Were it consistent with our plan, to institute a full inquiry into his principles, many objections might be urged against much of his theory, respecting the nature of fever. As this, however, is not the case, we shall take the liberty of offering a few remarks which obviously present themselves, leaving the fuller discussion of the subject to others.

His first position, that fevers of all kinds are preceded by general debility, does not seem to be sufficiently proved. Contagions, in exciting fever, do not induce previous debility, unless the first cold fit be so called ; which, however, does not always take place ; or if it does, is often so slight, and evanescent, as to escape our observation. Previous weakness, also, does not appear to render the effects of contagion greater, which, on the author's theory, it ought to do. The small-pox affords us many instances of this, when it attacks constitutions previously much debilitated.

That fever is an affection of the blood-vessels simply, has not, at least to our conviction, been proved. The state of the system which accompanies local inflammation, and which has been called General Inflammation, appears to be a very different affection from simple fever. That, undoubtedly, is chiefly an affection of the vascular system. It differs from simple fever in depending on its cause, the local inflammation which excited it ; from this it has its origin, and with this it terminates. Simple fever, on the contrary, pursues a regular course, independent of its cause, and, as far as our experience goes, independent, in great measure, of any plan of treatment. In many cases of fever, the vascular system, as far as we can judge by the pulse, and other vascular motions, is very little affected, and not at all in proportion to the general affection of the system. Almost all the functions of both body and mind shall be disordered ; yet we shall not find marks of great excitement.

itement in any one part of the system. The regular progress of fevers which are unaccompanied by local inflammation; the periods they observe; their spontaneous and often sudden termination, without any remarkable change in the vascular system; all seem to point out, that fever, strictly so called, does not consist, in increased excitement of the blood-vessels.

After all, it is easier to say what fever is not, than what it is. We may as well content ourselves, at least till we know more of the animal œconomy, with those facts respecting the phenomena and cure of fever, which observation and experience have taught us. Nothing will be gained by assuming as facts what has not been satisfactorily proved.

Dr. Rush observes, that the irritability, or disposition to preternatural motion being the predisposing cause of fever, is proved, by their occurring most frequently in infancy and early life. At this time of life, undoubtedly, the excitability of the system is greatest: but we should not hence infer that fevers most frequently arise in it. On the contrary, simple fever very rarely attacks infants. Their systems very readily become affected by slight causes, and those which act locally: a small boil, for example, will excite increase of action in the whole vascular system; but this state is not fever, for it depends on its exciting cause, and ceases with it. It is remarkable, too, that infants are hardly susceptible of fever from contagion, if we except the exanthemata, which attack only once during life.

With respect to this latter class of diseases, it is absolutely impossible to explain on Dr. Rush's principles, why each should be attended with a specific eruption, peculiar to it in appearance, progress, and duration. If, for example, the various contagion, produces indirect debility in the first instance, what is the exciting cause of the great vascular action which follows? And why does it terminate in the eruption of pustules of a particular kind? This can only be answered

answered by saying, that different stimuli produce totally different effects on the system; a difference which can be learnt by experience alone; and therefore all reasoning *a priori* is inadmissible. There is something, then, in fever which is not understood. Dr. Rush, indeed, admits, that the action of the arteries in fever is *irregular*, to distinguish it from simple increase of action; an admission which appears to us quite sufficient to overturn his theory altogether. It is this *peculiar* or *irregular* action in fever, which we contend for, and which, we maintain, is known only by its effects. The laws which regulate this peculiar action are pretty well ascertained from observation; of its real nature we are altogether ignorant.

If the theory, then, upon which Dr. Rush's practice is founded, be insufficient to satisfy us, the propriety of that practice must rest on an appeal to experiment. And here his doctrine stands on strong ground. Of his discernment, his industry, and his judgment, we entertain a very high opinion. We think him incapable of wilful misrepresentation, and eager to improve the study of his profession, and to benefit the human race. To his practical observations we are always inclined to pay much deference.

Admitting, therefore, that his practice has been as successful as he represents it, it is a question whether it is equally applicable in different climates and in different countries. In this country, the practice of blood-letting has of late years considerably declined; which could not well have been, if its beneficial effects were so evident, as they have been in America. In rheumatism, and in consumption, blood-letting has been carried to a very considerable extent; but the event has not been sufficiently favourable to induce a continuance of the practice. Though it undoubtedly is capable of relieving the most pressing symptoms, it is not clearly ascertained that it has

entirely taken off either of those diseases in a short time.

Upon the whole, we can readily believe that blood-letting has grown too much into disuse in our time, and that it is capable of effecting much good in many cases where it is at present reprobated. This, however, is independent of theory. Time, and the most sedulous attention to the subject, can alone reconcile the differences which exist between Dr. Rush and his opponents. To these we consign the question.

ARTICLE XV. *Elements of the Veterinary Art, containing an Essay on the Proportions of the celebrated ECLIPSE; six Lectures on Farriery, or the Art of Horse-shoeing, and on the Diseases of the Foot; an Essay on the Grease, which obtained the Prize Medal given by the Royal Society of Medicine; an Essay on the Glanders; and Observations on the Gripes. The whole Illustrated with nine Anatomical, Geometrical, and Mechanical Engravings. By CHARLES VIAL DE SAINBEL, Professor to the Veterinary College: to which is prefixed a short Account of the Life of the Author. Quarto, 433 pages, price 1l. 1s. London 1797. Sold by T. BOOSEY, Old Broad Street.*

WE shall not, we trust, be deemed to wander from our proper path, in noticing a work on the principles of the Veterinary Art, when its near relation to that of medicine is considered, of which indeed it may be said to form an important part. The inquiry into the structure and functions of animals has, in many points, elucidated and improved the science of human physiology; and there is no reason to doubt, that the investigation of their diseases will reflect an equal degree of light on pathology. It is not a little surprising, that a nation which has, in an

an eminent degree, distinguished itself in arts and sciences, that of farriery, or what may be called comparative medicine, should have been so entirely neglected, as to be at the very lowest ebb; its practice confined to men totally devoid of education, and wholly unacquainted with the most obvious principles. The consideration of the very imperfect state of the art, and an earnest desire for its cultivation and improvement, gave rise to the establishment of the Veterinary College, now supported by public aid: an institution that promises to be productive of great national benefits, not only in respect to the art itself, but by the reflected light it is likely to cast on the important science of medicine.

It is not our purpose to enter into a critical examination of the merits of the work before us, or to estimate the abilities of the author in the execution of his plan. This is a task we feel ourselves incompetent to fulfil. We can, however, venture to recommend it, as almost the first on the subject, which, in this country, has attempted to teach the *principles* of Veterinary science.

The title shews sufficiently the contents of the volume.

ARTICLE XVI. *Observations on the Structure and Oeconomy of Plants: to which is added, the Analogy between the Animal and Vegetable Kingdoms.* By ROBERT HOOPER, M. D. Octavo, 129 pages, price 4s. London, 1797. RIVINGTONS.

THE observations here contained are of an elementary nature, and principally intended for those who have not made the subject their particular study. The author, in the present compendium of vegetable physiology, has collected from the best

sources ; and we deem his work no less calculated to gratify curiosity, than to instruct.

The further our investigations are carried into the nature and properties of life, the more striking do its unity and simplicity appear, under whatever variety of structure it is found to exist ; and as the more we can vary our views of things, the more accurate necessarily becomes our acquaintance with them ; so there is no doubt, that the nature of life and the laws by which it is regulated, will be further illustrated, and better understood, by examining it, and comparing it, in all the variety of bodies endowed with the living principle.

Both the external structure and internal organization of plants and animals are such, when compared, as to afford a very striking analogy. The laws, likewise, by which their lives are regulated, and their various functions performed, agree in the most important respects. This similarity will appear from the following observations, on the animal functions of plants in general ; on the automatic motion ; and on the sleep and watching of plants.

The animal functions in general. The motions of the leaves, and parts of the fructification, which are very similar to those of animal muscles, constitute in vegetables the *animal functions* : to which are referred the automatic motion, sleep, and watching of plants.

Plants are supposed to have no sensation, because in the vegetable system no nerves are detected : but is not sensation perceived in all the intestinal worms*, in which also nothing like nerves can be found ?

* This the author has proved in a work on the ANATOMY and PHYSIOLOGY of HUMAN INTESTINAL WORMS, ready for the press ; in which he has given an account of the TRICURIS, very lately discovered by him, which only inhabits the human body, and also plates of all the species of worms. There are likewise many insects which are destitute of nerves, but which nevertheless shew evident marks of sensation.

The automatic motion of plants. The contraction and relaxation of the leaves, or parts of the flower of a plant, from the application of a stimulus.

This contraction and relaxation cannot be considered as voluntary; for plants are destitute of volition: nor can it arise from the influence of nerves, for, as it has been before observed, no such instruments have as yet been detected in them.

It is evident, therefore, that it must arise from the IRRITABILITY of the fibres; for every plant possesses, in a greater or less degree, this *principle of irritability**.

The cause of the difference would appear to depend upon the capacity of the fibres to receive the irritable principle: thus every plant has a degree of irritability peculiar to it, and hence one species is deprived of its irritability by external stimuli, when another will bear the same with impunity. Many plants also become gangrenous in the spring time, after a severe cold night, while others are not in the least hurt. The *Phaseolis vulgaris*, for instance, will be found dead under the above circumstances, and the *Pisum sativum* flourishing by its side.

A plant also possesses, at different times, more or less of the irritable principle, which would appear to depend upon various external stimuli, as will be explained hereafter. When it is abundant, it is called ACCUMULATED IRRITABILITY, and when deficient, EXHAUSTED IRRITABILITY†.

The irritable fibres of a plant would seem to have a connection or *sympathy* with each other; for if a stimulus be applied to one fibre only, it is communi-

* This principle has, by some writers, been considered to be OXYGEN; there are, however, many objections to this opinion.

† The diseases of plants are in the present day very little understood; but the doctrine of irritability, which every day is experiencing very rapid improvements, it is to be hoped, will establish some rational system, by which the pathology of the vegetable creation will be better understood, and the diseases in a great measure remedied.

ected to the rest : but the effect is always the greatest upon the fibres that immediately receive it, and much less upon those which only act by sympathy. Thus when a plant, whose contractions are visible to the naked eye, as the *Mimosa sensitiva* is irritated by a stimulus, the whole plant is affected, but not in that degree as the part to which the stimulus was applied.

The irritable fibres of plants, like those of animals, are deprived of their irritability in proportion to the frequency of the application of the stimulus ; and consequently the contraction of the fibre (which is totally dependent upon the principle of irritability) is diminished in the same proportion : thus if the irritability be diminished, the contractions are also ; and if exhausted, they totally cease.

From these observations it is evident that the automatic motions of plants arise from the peculiar fasciculæ of irritable and muscular fibres, which do not, like animal muscles, become red, but are white.

In this manner the contraction of the parallel and fasciculated fibres of the stalk of the leaf of the *Hedysarum gyrans*, *Mimosa pudica*, *Oxalis sensitiva*, *Dionæa muscipula* ; the nodding of the filaments of the *Parnassia palustris* and *Ruta lalepenfis*, take place, when the different stimuli irritate them to motion.

The HEDYSARUM GYRANS, or moving plant, is of the class *Diadelphia*, and order *Decandria*, and a native of the East Indics, where it is called *Burrum Chundalli*. It is a trifolious plant, and the lateral leaves are much smaller than those at the end. The leaves in the day-time are continually moving up and down, and circularly. The circular motion appears to be performed by the twisting of the fibres at the bottom of the stalk ; and while the one leaf is rising, its associate is generally descending. The motion downwards is quicker and more irregular than the motion upwards, which is steady and uniform. If a
branch

branch of this plant be cut off, and put into water, the same motions continue in its leaves for the space of twenty-four hours after. If from any obstacle the motion of the leaves be retarded, upon the removal of that obstacle it is resumed with a greater degree of velocity. What is most remarkable in this plant, is, that the larger terminal leaves do not move, unless stimulated by the solar rays, on which account they cease when the leaves are clouded; whereas the stipuliform leaves constantly move, and are interrupted by no stimulus. The motion of the larger terminal leaves is also increased in the night-time by a stimulus, at present unknown.

The MIMOSÆ are of the class *Monœcia*, and order *Polygamia*. Mimosa signifies mimic, and is given to this genus on account of the irritability of the leaves, which, by their motion, mimic or imitate, as it were, the motion of animals. All the species are more or less irritable; but the following are the most so:

1. The MIMOSA SENSITIVA, or *common sensitive plant*, whose leaves and footstalks recede from the touch, though not with the same facility as some of the following.
2. The MIMOSA PUDICA, or *bashful sensitive plant*. By the least touch the leaves instantaneously recede, contract, close, and, together with the footstalk, quickly decline downward, as if ashamed of the approach of the hand.
3. The MIMOSA PERNAMBUCANA, or *slothful mimosa*. The leaves of this species do not recede from the touch; but its *pinnæ* are a little contracted when smartly struck: hence it is called slothful.
4. The MIMOSA ASPERATA, or *panama sensitive plant*. This species would form an hedge or fence round a garden. The leaves are numerous, small, and winged, and, next to those of the *M. pudica*, are the most irritable, contracting

with the least touch, and remaining so for many minutes after.

5. The MIMOSA VIVA, or *lively mimosa*. This is the smallest of the sensitive plants, is furnished with creeping roots, and spreads itself so as to cover large spots of ground. By running a stick over the plant a person may write his name ; and it will remain visible for ten minutes.
6. The MIMOSA QUADRIVALVIS, which slightly recedes from the touch.
7. The M. PUNCTATA, and M. PLENA, are only sensitive in the *foliola*, which are very susceptible of any substance, or even of the air.

The contractions of the OXALIS SENSITIVA, are of the same nature with those of the *Mimosa sensitiva*.

The DIONÆA MUSCIPULA, or *Venus's fly-trap*, is of the class *Decandria*, and order *Monogynia*. It grows in America, about 35 degrees of N. Latitude, in wet, shady places, and flowers in July and August. The peculiarities of this plant are in the leaves, which at their upper joints are furnished with a particular apparatus, so that when an insect alights upon it, the parts are irritated, the two lobes of the leaf rise up, grasp it fast, and by means of two rows of spines, which close together like teeth, squeeze it to death. The lobes never open again while the dead animal continues within. Every part of this apparatus is besmeared with a sweet secretion, which attracts the unfortunate animal, and tempts it to taste it. It is nevertheless certain, that the plant cannot distinguish an animal from a mineral substance ; for if a piece of straw, or a pin be introduced, it will be grasped full as firmly ; nor will the lobes open while it remains. If the substance enclosed be gradually pushed out, the lobes again expand themselves ; but if any force be used to open them, so strong has nature formed the spring of the fibres, that one of the lobes generally snaps off rather than yield.

Automatic

Automatic motion is also to be noticed in a great number of flowers ; which motion is observed to take place at particular times. Some flowers, for instance those of the *Reseda luteola*, or Dyer's Weed, *Helianthus annuus*, and several others, constantly turn towards or against the sun : others are influenced by certain states of the air or sky. Thus the flowers of the Syngenesious plants shut in cloudy, cold weather, and open when it is serene and warm. The flowers of the erect campanula, in cold rainy weather, either nod or twist round their petals, lest the pollen be washed away by the rain from the anthera, or the smegma, or moisture, from the stigma. Many flowers open in the morning, and close again in the evening : others open and shut themselves at certain and regular hours ; as the Common Dandelion (*Leontodon taraxacum*), which opens between five and six in the morning, and contracts between eight and nine in the evening ; and the *Mesembryanthemum linguiforme*, which opens between seven and eight, and shuts about the third hour after noon*.

There is a connubial motion observed in the parts subservient to generation, during the time the pollen is discharging upon the stigma : as will be explained in its place.

The STIMULI, which excite the irritable fibres of plants to motion, are mechanical irritation, light, heat, water, vital air, and electric fluid, when moderately applied.

The leaves of the *Mimosa pudica*, &c. contract by touching them ; and those of the *Dionæa muscipula* are irritated by the fly, and other substances, to so powerful a contraction, as to retain the substance. These and the like stimuli may be considered as acting me-

* From a variety of similar circumstances, the immortal LINNÆUS divided flowers into the *Flores Meteorici*, *Æquinoctiales*, and *Tropici* ; and formed the HOROLOGIUM FLORÆ. Vide Linnæi Philosoph. Botan.

chanically ;

chanically ; for a pin, a straw, or any other substance, will equally affect them.

The terminal leaves of the *Hedysarum gyrans* are irritated to move by the rays of the sun ; but when clouds intervene, the motion ceases. The *Mimosa pudica*, if concealed for twenty-four hours in a dark place, is found to be much more irritable when exposed to the sun. These actions, therefore, would appear to be from the stimulus of *light* alone, as no other stimulus produces the same effect.

The motion of the leaves of the *Hedysarum gyrans*, in its native soil, or when in a hot-house, is more vivid and stronger than when surrounded by cold air. The stamina of the *Berberis* are known to be less irritable when exposed to a northern wind, than those which lie concealed, and cannot be affected by the cold air ; and all plants are excited to put forth their flowers by the stimulus of *heat*, when applied proportionably to the irritability of the plant ; under which circumstances heat is known to affect the activity of the irritable fibres, and to facilitate vegetation in general*, as is obvious in hot-houses, &c.

The flaccid stamina of the *Berberis* also recover their former irritability, if the bough be cut and put into *water*. The *Mimosa pudica*, although in earth well watered, is in dry weather less irritable than when surrounded by humid air.

The power of *vital air* in stimulating plants is evident from this ; that no kind of air deprived of oxygen, is favourable to vegetation ; and that water mixed with the oxygenated muriatic acid, very much accelerates the germination of the seeds,

The leaves of the *Hedysarum gyrans*, when in motion, are said to gyrate more strongly by applying

* Thus Cicero appears to have considered it as the vital principle ; for he says, “ Omne vivum, sive animal, sive terræ editum, vivit propter inclusum in eo calorem.”

moderately the *electric fluid*; but if it be applied in too great a degree, the motion is destroyed.

Lastly, the irritability of all plants is generally the greatest in the morning and noon, less during excessive heat, and least in the evening.

The STIMULI, which diminish the irritability of the fibres, are excess of heat, cold, light, mephitic air, electricity, and opium. Thus the stamina of flowers in the morning move with more strength in moderately warm weather, than in *excessive heat*; and the leaves of the *Mimosa sensitiva*, exposed for a long time to the heat of the sun, cannot be agitated nor irritated into a gyrated motion.

During *severe cold weather* the irritable fibres become rigid, dry, and hard; hence in the vegetable, as in the animal fibre, the irritability disappears. Thus the leaves of the *Hedysarum gyrans*, and the stamina of the *Berberis vulgaris*, are much less irritable when the north wind blows. Thus also many plants, as well as animals, become torpid, the organs of circulation and of nutrition perform their functions but languidly, and life itself appears suspended.

Tender plants, too long exposed to the *light* of the sun, languish. For this reason gardeners defend young plants in the earth from the light of the sun; and thus seeds deprived of light, germinate sooner than if exposed to it.

The *Mimosa pudica* flowering in *vital air*, droops if put into *fixed* or *mephitic air*, and becomes less irritable; and if continued, dies (almost in the same manner as animals which are suffocated therein), and exhibits no signs of irritability. Most plants in general die if exposed long in these airs. The leaves of many plants, very tenacious of their irritability, if put into water impregnated with the carbonic acid, become very soon deprived of it, and die*. Inflam-
mable

* There are, however, several plants which grow and flourish in mephitic air; as the *Lichen verticillatus*, *aidelius*, *radiciformis*, and *pinnatus*,

mable air kills plants; in nitrous air they become turbid in a few hours; and seeds placed in mephitic air, never germinate.

The *Murina*, and other animals severely struck by the *electric shock*, shew no signs of irritability, and cannot be moved by any stimulus: in the same manner the *Mimosa sensitiva* and *pudica*, when severely struck by the electric power, cannot be excited to contract by any known stimulus: nor can the terminal leaves of the *Hedysarum gyrans* be stimulated to motion, nor the wounded branches of the *Euphorbia* or *Carica* pour out any milky juice, if their irritability be destroyed by the same means.

The irritability of the *Hedysarum gyrans*, and *Mimosa pudica*, is gradually diminished, and at length destroyed, by watering the earth in which they grow with a solution of *opium*.

Lastly, the irritability of plants, like that of animals, when harassed by too frequent application of stimuli, becomes less powerful; and the moving parts of the plants already mentioned have, by being too frequently stimulated, their irritability totally destroyed. The same parts, when cut off from the plant, although not put into water, do not lose their irritability for a considerable time; for the stamina of the *Berberis*, and leaves of the *Hedysarum* and *Mimosa*, are obedient to a new stimulus for some time after.

The sleep and watching of plants. The closing of the petals and leaves of plants constitutes the sleep; and the unfolding of the different parts, the watching of plants: hence most flowers shut themselves at particular times, and again unfold them.

The reason why plants fold up and close their petals generally in the evening and at night-time, is,

pinnatus, most of the *Byssa*, the *Agaricus acephalus* and *aberuntius*, the *Boletus botryoides*, &c. and which, if put into any other air, die; but these are to be considered as exceptions, and do not lead to any general rule.

most

most probably, in consequence of the usual stimuli, heat, and light, being at those times absent.

There are, nevertheless, many plants in which sleep does not take place in the evening, &c. but which rest even when exposed to the stimuli just mentioned. Thus the *Solanum nigrum*, *Ranunculus repens*, &c. shut and close their petals some hours in the day-time; the *Spiræ filipendula*, &c. in the middle of the day; the *Cactus grandiflora* opens its flowers at sun-set, and folds them up in the morning: and the *Mesembryanthemum noctiflorum* is awake only during the night.

There are also several plants which discover the state of rest clearly by their external appearance: thus the *Alfne media* joins the upper sides of its leaves; the *Ænothera mollis*, &c. fix them on the stalks; and in some the leaves are erect, and in others drooping.

If this remarkable phenomenon, sleep, depend or be connected with the irritability of the plant, as from many experiments it appears to be, it follows, that, when the state near to exhaustion is present, it is necessary that the plant should sleep (be that time when it may), in order to re-accumulate its lost irritability.

ARTICLE XVII. *An Account of Two Cases of the DIABETES MELLITUS: with Remarks as they arose during the Progress of the Cure. To which are added a general View of the Nature of the Disease and its appropriate Treatment, including Observations on some Diseases depending on Stomach Affection; and a Detail of the Communications received on the Subject since the Dispersion of the Notes on the First Case.* By JOHN ROLLO, M. D. Surgeon-General, Royal Artillery. *With the results of the Trials of various Acids and other Substances in the Treatment of the Lues Venerea; and some Observations on the Nature of Sugar, &c.* By WILLIAM CRUICKSHANK, Chemist to the Ordnance, and a Surgeon of Artillery. 2 Vol. Octavo, 606 pages, price 10s. DILLY, London, 1797.

A FEW months ago a printed account of the first of the cases here related, with the treatment that had been successfully adopted, was put into the hands of several practitioners, who might probably have opportunities of seeing the disease in question, soliciting a trial of the author's mode of cure, with an account of the results. Meeting, however, soon after, with another case of the disease, in which the good effects of the treatment were hardly less striking than in the former, Dr. Rollo was induced to lay the whole before the public, in its present state. We shall endeavour to give our readers a clear and tolerably full account of the work. But from the accurate detail of symptoms and circumstances, and the copious and judicious observations of the author, arising naturally from the novelty and importance of the subject, it will be impossible for us to do justice to it in an abstract: we therefore strongly recommend it to the perusal of our readers.

The

The subject of the first case was Captain Meredith, 34 years of age, had eat and drank freely, but not intemperately, and was fond of high-seasoned meats. He had had two regular attacks of gout. At the time of examination, he voided about twelve quarts of urine in 24 hours, which was of a light straw colour, had no smell of urine, but had a whey and violet flavour, and its taste very sweet.

The thirst was excessive, the patient drinking seven or eight quarts during the day; the tongue whitish and moist; there was a clamminess in the mouth, and he spat a white frothy saliva of a sweetish taste. The appetite variable; sometimes unusually keen, and at irregular hours. The skin dry, but not warm; pulse weak, not exceeding 84; the face flushed. Sicknefs frequent, with viscid matter thrown up, of a bitterish and sweetish taste: a pain at the stomach after eating. There was a constant pain in the region of both kidneys, more particularly in the right, in which there seemed to be a greater fulness and tenderness to the touch; retraction of the testicle, with a weakness, sense of coldness, and oedematous swelling of the leg on the same side. There was a singular, painful and fluttering sensation in the belly, extending from the situation of the kidneys. The bowels regular, stools of a greenish colour: prepuce was excoriated and sore. The gums were reddish, as from mercury, the teeth felt loose, and as on edge, and peculiarly white. Diet had not been restricted.

Thirty six ounces of the urine being evaporated, left three ounces and one drachm of saccharine extract, of the appearance of melasses but thicker, having nearly the consistence of wax, and like it tenacious. By standing in the air it became moist, and of nearly the consistence, smell, and appearance of treacle. Treating some of this extract with the nitrous acid, Mr. Cruickshank procured the saccharine or oxalic acid, and with a smaller proportion of the acid it produced a substance, which in appearance,

ance, taste, and smell, could not be distinguished from honey.

The serum of the blood did not impart a sweet taste, but tasted somewhat like whey, and was opaquely whitish. There was a buffy coat on the crassamentum. The mass dried without undergoing any putrefaction.

The disease had continued upwards of seven months, but had not been ascertained to be diabetes above four. Bark and alum had been used, with occasional relief.—Such was the outline of the case when it came under the author's care.

Two views of the case presented themselves: the one as depending primarily on a changed process of digestion; the other on a primary action and condition of the kidneys. The former opinion was adopted by the author, and the plan of treatment framed accordingly.

The circumstances which led to this opinion were, the affection of the stomach, the appearance of the stools, the taste of the salivary discharge, the phenomena of the blood, and the wasting of the body: these, the author thinks, mark a general disease depending on a changed and peculiar state of the stomach, by which sugar or matter possessing saccharine properties is copiously formed, with a defect of assimilation.

The serum apparently containing less saccharine matter than the urine may depend, he supposes, on the power of the kidneys in separating saline substances; and that the action of the kidneys becomes increased from this new stimulus. The painful state of the kidneys is attributed to the long continuance of their increased action.

The object of treatment, therefore, was, to destroy the saccharine process going on in the stomach, to promote a healthy assimilation, to prevent a supposed increase of absorption by the surface, to diminish the increased action, and to change the imagined de-
rangement

arrangement of the kidneys. To answer these indications, a diet of animal food was enjoined ; a drachm of kali sulphuratum to be taken daily ; the skin to be anointed with hogs-lard ; exercise to be avoided ; antimonial wine with opium to be taken at night ; an ulceration, about the size of half a crown, to be formed opposite to each kidney ; and the bowels to be kept open by aloes and soap. This plan was pursued, with some trifling variations, for five months, when the patient was considered as perfectly recovered.

The hepatized ammonia was substituted in place of the kali sulphuratum, the alkali of the latter being supposed to have an improper effect on the kidneys. Respecting the hepatized ammonia which promises to be a valuable medicine, we have the following remarks of Mr. Cruickshank. It is easily prepared, by making a stream of pure hepatic gas pass through the aq. Ammon. Ph. Lond. until no further absorption is perceived, or until the alkali is saturated. The hepatic, or sulphurated hydrogen gas, should be obtained for this purpose from artificial pyrites, or sulphuret of iron, and the muriatic acid. The easiest method of making the artificial pyrites, is to raise a piece of iron in a smith's forge to a white heat, and then to rub it against the end of a roll of sulphur ; the iron at this temperature immediately combines with the sulphur, and forms globules of pyrites, which should be received into a vessel filled with water. Those globules are to be reduced to powder, and introduced into the proof, to which a sufficient quantity of muriatic acid is to be added. The dose to an adult should not at first exceed 3 or 4 drops, three or four times a day, and this dose to be gradually increased, so as to produce slight giddiness.

The subject of the second case was a General Officer, aged 57, who had indulged freely in rich
VOL. IV. O food

food and wines, for several years. His symptoms were excessive thirst, a foul tongue with bright red edges, constant spitting of a mawkish, sweetish, though sometimes sourish saliva; teeth felt as on edge; gums bright red, full and enlarged. Appetite rather keen; a disagreeable sensation, sometimes amounting to pain, in the loins on rising or sitting down. The quantity of urine ten or twelve pints in 24 hours; with urgent propensities and constant dribblings. The urine was sweeter to the taste than Captain Meredith's, and of a lighter colour. Skin dry and slightly hot. Pulse 104, rather feeble and small: the face flushed. Legs oedematous: cough and pains in the chest, for some weeks. These complaints were of 3 years standing: had strictures in the urethra for many years. The appetite had been keen and voracious: but for the last 3 months, was less vehement: thirst excessive.

The prospect in this case was less flattering, than in the former, so far as the perfect restoration of health was concerned, but the same treatment was adopted, and continued for two months, always with the effect of diminishing the quantity and destroying the saccharine quality of the urine, in proportion as the plan laid down was adhered to more or less rigidly. Indulgence and impatience of restraint, however, at length frustrated the design of the treatment and the diabetic symptoms were reproduced.

Following the journal of these two cases, is an abstract of the most remarkable circumstances and changes in the disease, during the progress of the cure.

From both cases the following general and comparative inferences are drawn:

1st. That the Diabetes Mellitus is a disease of the stomach, &c. proceeding from some morbid change in the natural powers of digestion and assimilation.

2d. That the kidneys, and other parts of the system,

as

as the head and skin, are affected secondarily and generally by sympathy, as well as by a peculiar stimulus.

3d. That the stomach affection consists in an increased action and secretion, with vitiation of the gastric fluid, and probably in too active a state of the lacteal absorbents.

4th. That the cure of the disease is accomplished by regimen and medicines preventing the formation of sugar, and diminishing the increased action of the stomach.

5th. That confinement, an entire abstinence from every species of vegetable matter, or diet solely of animal food, with emetics, hepatised ammonia, and narcotics, comprehend the principal means to be employed.

6th. That the success of the treatment in a great measure establishes the five preceding inferences.

7th. That the saccharine matter of the disease is formed in the stomach, and chiefly from vegetable matter, as has been shewn by the immediate effects produced by the abstinence from vegetable matter, and the use of animal food solely.

8th. That acescency is predominant in diabetic stomachs, which continues even some time after the entire abstinence from vegetable matter, and after the formation of sugar; and that while such acescency remains, the disposition to the disease may be supposed to continue.

9th. That the saccharine matter may be removed in three days, and by avoiding vegetable matter will not be again reproduced; but we are not yet able to state accurately when the disease, and the disposition to it, can be finally removed. Such knowledge may be, however, acquired in other cases where the patients adhere correctly to rules.

10th. That there are two circumstances to be considered in this disease, which we may separate in

the progress of the treatment ; as it has been shewn, that though the formation of sugar was prevented, yet the increased action of the stomach remained and maintained the defect of assimilation, which prevented nutrition. Hence two objects occur in cure : for it is not yet determined whether the preventing the formation of sugar by an entire abstinence from vegetable matter, and the use of animal food with fats, if properly persevered in, might not ultimately comprehend the other, namely, the removal of the morbid action of the stomach.

11th. That the lungs and skin have no connection with the production of the disease.

12th. That the quantity of urine is probably in proportion to the quantity of liquids taken in, and has but little dependence on absorption of fluids from the surface of either skin or lungs.

13th. That though the disease has been shewn to consist in an increased morbid action of the stomach, and probably too great a secretion, with vitiation of the gastric fluid, yet the peculiar or specific conditions of either, as forming the disease, is acknowledged to lie in obscurity, and must remain so until the physiology of healthful digestion is properly explained and established.

14th. That the first case had only been of about seven or eight months duration when the treatment commenced ; but the second case had been upwards of three years continuance. The age of the one was 34, of the other 57 : circumstances which constituted material differences, though they seemed not to create corresponding differences in the treatment, so far as the direct removal of the complaint was concerned ; they may, however, retard in the one instance the entire restoration of health.

15th. That in both cases, deviations occurred in the management, and were respectively followed by reproductions of the disease, and though disadvantageous

geous to the patients, have confirmed our views of its nature and treatment.

16th. *And lastly.* That from both cases we may warrant this general conclusion, **THAT THE DIABETES MELLITUS IS SO FAR UNDERSTOOD, AS TO BE SUCCESSFULLY CURED.**

The author next gives a brief narration of what has been hitherto known, or formerly advanced respecting this disease: the opinions which he adduces are, those of Dobson, Cullen, Home, Darwin, and Richter. The sum of these is,

1. That the Diabetes Mellitus has been by some referred to a defective state of digestion and assimilation.

2. That it has been referred to a morbid condition of the kidneys.

3. That the precise nature of either affection has not been explained, nor understood.

4. That the disease has been generally held incurable, as no distinct views of treatment have been proposed, nor any practical mode been uniformly successful.

5. That immoderate thirst, voracious appetite, and a great discharge of urine, containing a large proportion of saccharine and other matter, are characteristic symptoms of the disease.

6. That dissection has shewn very slight changes in the natural appearance of the kidneys; but that an enlargement of mesenteric glands has been uniformly met with.

7. That the blood, taken in any period of the disease, though not sensibly sweet to the taste, except in Dobson's case, yet its serum has a wheyish appearance. Home, however, mentions no appearance deviating from that of health, but a thick inflammatory crust in the blood of one of the patients.

8. That the only relief has been obtained from blood-letting, emetics, narcotics, antispasmodics,

warm-bathing, rubbing the skin with oil, animal fats received into the stomach, and what Home terms septics; though Dr. Ferriar and Mr. Scott attribute cures to bark, the sulphuric and nitric acids.

And 9. That tonics and stimulants generally have done harm.

Dr. Rollo next gives a general view of the nature and treatment of the Disease, as suggested by the previous facts; with miscellaneous observations on Scurvy, and other Diseases, depending on Stomach Affection.

Scurvy is considered as the reverse of Diabetes, and consisting in a diminution of the natural action of the stomach, with some vitiation of gastric fluid. Phthisis is supposed to resemble Diabetes, in many of its circumstances, and the author is not without hopes that a plan of treatment conducted on analogous principles might be successful in at least removing the predisposition to pulmonary consumption.

On the new Doctrines of Chemistry, Dr. Rollo thinks, the nature and treatment of Diabetes Mellitus may be explained: viz. as depending on a hyper-oxygenated state of the system, formed by a morbid condition of the stomach, and peculiar combinations in it. Hence the obvious remedies would be those abstracting oxygen from the system, and removing the morbid condition of the stomach: the particulars, it is evident, would include those adopted in the above cases.

This concludes the first volume of the work. The second commences with an account of communications to the author, after the dispersion of his notes on Captain Meredith's case. Without detailing these we shall give the author's remarks on the occasion, which will sufficiently shew, how far they go in extending and confirming the general account of the disease. With respect to the *Causes* of Diabetes Mellitus,

Mellitus, a case of the disease is related in Dr. Falconer's Letter, which was apparently produced by excessive indulgence in spruce beer to reduce corpulency. In Dr. Cleghorn's first case, the patient had worked hard while under convalescence from fever. In another case of a Gentleman 77 years of age, he had been addicted to the free use of sugar. In a case by Dr. Gerard, the patient had been subject to pyrosis, and liable to much perspiration, previous to the diabetic attack.

With respect to the *Nature* of the disease, Dr. Baillie appears inclined from inspection of the kidneys, to consider these as the principal seat of the affection; but Dr. Rollo thinks his account furnishes no inference, but what may be referable to the sequelæ of the disease. Mr. Abernethy found the serum of the blood *turbid*; and he observed that sugar taken into the stomach increased the saccharine matter in the urine.

With regard to the *Treatment*, Dr. Duncan found in one case fat meats serviceable. Dr. Falconer recommends the mephitic alkaline water, and from the advantage the patient of seventy-seven derived from SCHWEPPE'S Soda water, the author thinks it may be of service, as calculated to relieve the acescency of the stomach. The Soda he thinks preferable to the vegetable alkali as less likely to act on the kidneys. Dr. Beddoes mentions a case where the Bristol water cured the disease, and that repeatedly*.

Dr.

* We cannot forbear to quote the following from Dr. Beddoes.

April 14, 1797.

“ You ask my present opinion on consumption. Allow me generally
 “ to say, I have now no chemical theory of any one disease. I never
 “ held any such opinion. In different ways, (at lectures and in publi-
 “ cations) I started conjectures to be compared with facts; and now
 “ I think all those conjectures are shewn to be erroneous by facts. I
 “ used to think my hypothesis on Scurvy very probable, and I was con-
 “ firmed in this idea by Dr. Trotter. But I at present think we were
 “ both

Dr. Currie has seen several cases of the disease, but never saw a case of it with sweet urine cured. One of the cases shews the effects of animal food. It was begun on the 29th of December, when the daily quantity of clear sweet urine amounted to 13 pounds; on the 31st, two days only, the quantity of the urine was reduced to 5 pounds, and it had acquired a strong urinous smell.

Two cases treated at Glasgow by Dr. Cleghorn, shew also the good effects of entire animal food, and of the influence of commotions in the bowels on the quantity of the urine. The case of the Gentleman of 77 likewise shews the efficacy of animal food; but the most striking is one related by Dr. Gerard in the Liverpool Infirmary. From this case it appears, that in this disease there is no absorption of fluids by the skin, for the body gained nothing by immersion in the warm bath; and that animal food may alone, if duly persevered in, cure the disease; and such perseverance may probably be of a very limited duration.

We shall defer to a future number, the very satisfactory account, by Mr. Cruickshanks, of the trials of various acids, and some other substances, in the treatment of Lues Venerea; for the purpose of noticing some experiments and observations on the nature of sugar, as they are in some measure connected

“ both mistaken. Good, however, has arisen from these speculations,
 “ as they have brought forward observations which otherwise apparently
 “ would never have been made, and some of these observations are use-
 “ ful in practice. When I publish my view of the medical treatment
 “ to be pursued in the pneumatic institution, I will unfold what I here
 “ say, and add my reasons.”

So much for the stability of Medical Theories! The distinction between *holding* an opinion, and starting conjectures to be compared with facts, is a very nice one. It is certain that most of these conjectures have been taken up by converts, as settled opinions, and acted upon in a thousand instances. We have no hesitation in subscribing to the latter part of the letter. The collision of different sentiments seldom fails to elicit some sparks of truth.

with,

with, and admit of application to, the subject of Diabetes.

Sugar has been supposed to be a substance intermediate between mucilages and vegetable acids, containing more oxygene than mucilage, and less than the acids. From Mr. Cruickshank's experiments, it appears, that sugar yields, by distillation in a retort, more pyro-mucous acid than gum, in the proportion of 132 to 117. As oxygene is now allowed to be the universally acidifying principle, and as the acid yielded in both instances, viz. the pyro-mucous, was exactly of the same kind, it may be reasonably inferred, Mr. Cruickshank thinks, that the sugar which afforded the greatest quantity of acid, contained likewise the greatest proportion of oxygene; for it is probable, that both the carbonic acid, and the hydro-carbonate, which were given out, were formed from the decomposition of the water by the carbone of these substances, as neither was produced in any quantity until near the end of the operation; the oxygene therefore contained in the former should not be considered as entering essentially into the composition of either the gum or sugar.

Mr. Cruickshank next endeavoured to ascertain the particular changes and decompositions which take place during the process of malting, as it is well known that vegetable mucilages and fæcula are converted into sugar by this operation. By suffering some soaked barley to grow in oxygene air he found, that a quantity of oxygene was either absorbed or converted into carbonic acid. It appeared, also, that oxygene is absolutely necessary for the conversion of vegetable mucilage into sugar; as in no one instance was saccharine matter formed where this was not present, and the quantity of the former was always in proportion to that of the latter; for when the oxygene was consumed this process always immediately ceased. It is supposed, therefore, that vegetable mucilage is converted into sugar by being deprived

deprived of part of its carbone, whilst at the same time it is combined with a greater proportion of oxygene, and probably also with hydrogene, from the decomposition of the water.

From this hypothesis it should follow, that if sugar be deprived of part of its oxygene, it must lose its sweetness, and form something like a gum. This appeared really to be effected, by treating sugar with the phosphuret of lime, and with the different sulphurets ; with the former it assumed the appearance of gum ; the latter deprived it of its sweetness.

From these experiments, the utility of the remedies employed in the cases of Diabetes, on Dr. Rollo's principles, must be obvious, particularly the pure alkalies, lime-water, and the different sulphurets, all of which must counteract the formation of saccharine matter in the stomach. We also readily see the necessity of a diet consisting entirely of animal food ; this being the only one which cannot furnish oxygene, and that peculiar mucilage necessary for the formation of sugar.

We have thus finished our account of this very respectable work, as far as it regards the subject of Diabetes ; the history of which, as here detailed, is undoubtedly the best and most accurate that we are in possession of. The circumstances, whether making for or against the author's theory, are related with the greatest fairness and candour. Relying on this disposition then, we shall not scruple to confess, that, notwithstanding the variety of the facts, and the great probability they undoubtedly afford to the theory, we feel considerable difficulty in acceding to his opinion. We are far from thinking, that the question respecting the primary seat of the disease, is satisfactorily determined, in favour of either hypothesis. Many facts and much attentive observation are wanting to decide this point. From the most attentive consideration of all the circumstances, the weight of evidence

evidence appears to us to lean in favour of the supposition, of Diabetes depending on a primary affection of the kidneys. Others, no doubt, as facts happen to strike them, will join the author in his conclusion. The final determination of the question must still remain *sub judice*.

That there has been considerable affection of the kidneys, in all the instances of the disease, must be allowed; and the symptoms appear to us to admit of explanation, as depending on this. The intimate consent of the stomach and kidneys is well known; and that an affection of either should occasion irregularity in the actions of the other, is very easily conceived. So, far, therefore, the irregularities of appetite and digestion, may as well depend on kidney affection, as the contrary. The dry tongue, and other marks of increased action in the system, are also referable to a morbid state of the kidneys; and this could not be inconsiderable, if it was sufficient to excite pain and a sense of uneasiness, not in the loins only, but through the whole course of the urinary organs.

With respect to the production of sugar in Diabetes, the question is, where is it formed? If in the stomach, then ought it to be evident in what is thrown up at a certain stage of digestion; which has not been shewn. If the kidneys merely separate it from the blood, along with the other saline matters, the serum of the blood should shew it much more strikingly, than it ever appears to have done. We see no difficulty in supposing the kidneys capable of forming, or secreting sugar, under a peculiar action. We find the breasts separating, or rather forming, this substance copiously: it is not probable, as has been supposed, that the milk is a portion of the chyle merely, for milk is secreted freely long after eating: and there is a considerable difference in the properties of the two fluids. Is not the milk of carnivorous animals as sweet as that of the herbivorous tribe? Is a diseased

diseased state of the kidneys ever produced by large quantities of sugar being taken in as food, as is the case in the West Indies in the season? And does the urine in such cases contain sugar? These questions, if answered, would probably throw some light on the subject.

The strongest argument in favour of the author's theory is afforded, from the success attending his mode of treatment. But this is, perhaps, not altogether conclusive. Many important points in the plan of cure might be supposed well calculated to relieve a primary affection of the kidneys: such are confinement, and the avoiding exercise, which in general aggravates nephritic affections; such are, likewise, the antiphlogistic plan, and an abstinence from such saline matters, as would probably stimulate the urinary organs; and, above all, the exciting ulceration on the loins, and the application of stimulating liniments on the skin.

On these grounds therefore we cannot but think the question, relative to the proximate cause of Diabetes, still undecided. But whatever fate awaits the theory, the world is under great obligations to Dr. Rollo for having suggested a method of treatment eminently successful, in a disease which has generally baffled the efforts of the most skilful.

ARTICLE XVIII. *The Economy of Nature Explained and Illustrated on the Principles of Modern Philosophy.* By G. GREGORY, D. D. Author of *Essays Historical and Moral*, &c. 3 Vol. Octavo, with 46 plates, price 1l. 7s. in boards. JOHNSON, London, 1796.

THE want of a popular treatise of philosophy, the author observes, one which might serve as a proper introduction to natural history; to explain
to

to general readers the great principles and operations of nature ; to give, in a united view, the discoveries of the moderns on these important subjects, first suggested the present undertaking.

The general order and arrangement of the work are as follow : it commences with the first principles of philosophy, the laws of matter and motion, with an enumeration of the most simple or elementary substances. From these it proceeds to explain the nature and phenomena of that most active and subtle of elements, heat or fire, which is so intimately connected with all other substances. The theory of light and colours succeeds ; and this is followed by a short treatise of electricity. The different species of airs, and the atmospherical phenomena are next treated of ; these are succeeded by a description of the earth and mineral kingdom, and the most remarkable phenomena connected with them, such as volcanoes, earthquakes, &c. The nature and composition of water, with a short account of mineral waters, and of the general properties of that fluid, occupy the next department of the work. From these subjects the author proceeds to the vegetable kingdom, including what is known on the nature and theory of vegetation. The animal oeconomy succeeds ; which is concluded by a sketch of the human mind.

From this outline it will be seen, for whose use this work is calculated : for all, in a word, who wish to understand the elements and principles of natural history. The author conceives also, justly, that it will not be unuseful to the younger students of medicine, as it comprehends the first principles of chemistry and physiology.

ARTICLE XIX. *The Life of M. ZIMMERMAN, Counsellor of State and Chief Physician to the King of England at Hanover, &c. &c.* Translated from the French of S. A. D. TISSOT, M. D. 12mo. 154 pages, price 2s 6d VERNOR and HOOD, London, 1797.

THE lives of men who have distinguished themselves in those arts and sciences which have a relation to the health and happiness of mankind, form always an interesting subject of curiosity. Characters of this kind present to our view objects of emulation, and models to imitate. But man cannot be known by having the fair side of his character only delineated. Error and weakness are inherent in human nature. Every character has something in it, which it becomes us to avoid. To point out this, is not the most unimportant part of biography. M. Tissot presents his friend to the world, such as he knew him for above forty years : if on some occasions he praises, on others he takes the liberty to censure him with freedom ; and on the whole has presented a picture, which, cannot fail to excite much interest in the reader.

We are not here to speak of the medical abilities of M. Zimmerman : his works, which are well known throughout Europe, are his best panegyric. He seems to have possessed extreme irritability of nerves ; a circumstance which embittered a great part of his life. He was agitated by many events which, to men of firmer minds, would have passed unheeded. On the approach of the French towards Hanover in the year 1794, the idea of becoming a poor emigrant perpetually haunted him, nor could the negociation that secured the country restore him to tranquillity. Its melancholy effects are thus described by his Biographer.

‘ From the month of November, he had lost sleep, appetite, strength, and flesh. This state of decline continually

continually advanced. In January, he still paid some visits in his carriage, but often fainted at the top of the stair-case. Writing a recipe was a labour to him; he complained sometimes of confusion in his head, and at length quitted all business. This was at first deemed a hypochondriac fancy, but it was soon perceived, that a settled melancholy did not permit him long to follow the train of his ideas. That happened to him, which has happened to so many men of genius, one strong idea obtained the ascendancy over all the rest, and subdued the soul, which was unable to remove it out of sight. Preserving all his presence of mind, and the clearness of his conceptions, on all other objects, but no longer chusing to occupy himself with them, incapable of all labour, and not giving even his advice without difficulty, he continually saw *the enemy plundering his house*, as *Paschal* always saw a globe of fire at his side; *Bonnet*, an honest man robbing him; and *Spinello*, the devil standing opposite him. He used some remedies, and took a journey, but all to no purpose. He re-entered his house with the same idea with which he had quitted it; persuaded himself that he saw it pillaged; and fancied that he was entirely ruined.'

This notion impressed him so strongly, that his abstinence from food at last was partly attributed to his fear of poverty. He was worn away to a skeleton, became decrepid, and at sixty-six died of old age. He expired October 7th, 1795. We present our readers with the following summary of M. Zimmerman's character.

' Those who may read with attention what I have written concerning M. Zimmerman, perhaps at too much length, and certainly with too little order, will easily discern that he united a vast and original genius, a brilliant imagination, a great share of wit, an exquisite judgment, and extensive knowledge, not only in physic, but in politics, in morality, and in
ancient

ancient and modern history. *National pride, Experience in Medicine*, and *Solitude*, are subjects which had never been treated upon by others; subjects which he created, and upon which he has not given merely sketches, but finished works. His mind was pure; his heart was excellent; no one was ever more attached to his duties. He was a good son, a good father, and a good husband: friendship was with him a sentiment full of warmth, and if in some moments of inquietude he had differed with his friends in the most trifling degree, he made them ample amends by subsequent cordiality and goodwill. Gratitude was one of his most marked characteristics: he never forgot in the latter part of his life the smallest services that had been formerly rendered him. The irritability of his nerves has sometimes caused him to do wrong; it has perhaps led him to be guilty of extravagancies that may have made those who did not perfectly know, judge hardly of him. His first wife said when he was dying, "My poor Zimmerman, who will comprehend you?" Perhaps this state of instability has sometimes stopped him in his career; and his disconsolate wife wrote, "What a man would he have been, had not his nerves always governed him!" It was his nerves that produced in him occasional appearances of pusillanimity, very distant from his true character; it was his nerves alone that trembled at Sans Souci, when he was about to enter the king's chamber*. Whatever might have been the genius of Frederick, had Zimmerman any thing to fear in conversation? Indeed the trembling ceased as he drew near the King, and they conversed together with the utmost freedom and confidence. That was certainly not the case here; but if a man of moderate abilities has cause for apprehension while conversing

* When in a carriage he was in as constant a fear of accident as the most timid female.

with a man of genius, ought not timidity to be often found on the side of princes ?’

‘ This state of his nerves often made him feel infinitely too deeply those trifling disappointments which are incident to every condition in life, which ought to be felt as the disagreeable, but natural and necessary changes of weather are felt, and which ought not to occupy our attention. I have seen him sometimes so much affected with them, as to be scarcely himself. He one day wished me to quit Lausanne, because while we were walking together outside the town, we were overtaken by a very heavy shower and were wet through. Another time being gone to pay a visit a few leagues from hence, to a Lady whom he knew five and twenty years ago full of vivacity, elegance, and pleasure, he was so struck at finding her in the country dress busily employed in household affairs, that he could not speak a word the whole evening. He was going to see the Aspasia who overcame Socrates and Pericles, and he found the wise woman of Solomon ; this metamorphosis disordered him so much as to produce a disagreeable effect ; his pleasantness vanished, and there remained only the littleness of self-love humiliated. The Lady guessed the reason, smiled, and received him as she would have done twenty five years before. Why should one conceal traits of this sort ? however trivial they may appear, they belong to the history of man ; and we are not displeased at finding them belonging to superiors ; they diminish the distance that separates them from other men, and soften envy.

‘ M. Zimmerman was tall, well made, had a firm and easy gait, an elegant address, a fine countenance, and an agreeable voice : his genius sparkled in his eyes ; and if the small-pox had left its indentations upon him, it was only in such a degree as adds to the physiognomy what it takes from the skin.

‘ He has been deeply regretted by his wife, by all his friends, and they were numerous, by every physician who loves his profession and feels interested in its amelioration, by all his patients, by every person who knew him, and by all who partook in his way of thinking upon the important object that occupied him so much. M. Hoffman has just dedicated to his manes, in a very handsome manner, the second volume of a work intitled, *Very important Advice for our Times*, which may be considered as a continuation of his Journal.

‘ What upright mind does not regret the loss of a man who gave himself up with a perseverance, perhaps without example, to the good of humanity ; who, having seen spring up, and quickly become powerful, an association*, whose aim seems to be the destruction of every base on which, for so many ages, the order and happiness of society have reposed, first, and for a long time alone, combated all its principles, and opposed himself to its progress with a force and constancy of which few, very few, would have been capable ; who, without any other view than that of the general good, and animated by the admirable principle, that to spare the wicked is to hurt the good†, exposed himself to the most violent criticism, to the resentment, to the hatred, of a multitude of men, redoubtable by their talents, by their credit, and even by their principles ; who sacrificed his pleasures, his fortune, his repose, his health, and even his life, to the desire of putting a stop to a desolating scourge.

‘ Let thinking men prize him who was capable of doing what he did for the public good ; let them judge what a head and what a heart such an undertaking must require ; let them make a comparison between the men whose works have disseminated those

* The Secret Society of the Illuminated.

† Bonis nocet, quisquis perpercerit malis.

destructive principles which have produced such a state of things as perhaps there is not an honest man in Europe but suffers from, and him who has devoted himself to their refutation; let them decide which is the most worthy of their praise; and may their gratitude avenge my friend for all that malignity has done to tarnish his memory; to which posterity, better informed perhaps than we are, of the importance of the cause which he undertook, will undoubtedly render more justice than can be expected from the present times.

‘ M. Zimmerman’s post at Hanover has been made a joint appointment, and given to M. M. Wichman and Lentin.’

ARTICLE XX. *Suggestions for the Improvement of Hospitals and other Charitable Institutions.* By WILLIAM BLIZARD, Surgeon. Octavo, 109 pages, price 3s. 6d. DILLY, London, 1796.

THE object of this pamphlet is of so local a nature, and the views of the author so particularly directed to a single object, the extension of the funds and patronage of the London Hospital, of which he is one of the surgeons, that we are precluded from going at any length into its contents. It is divided into five sections. The first contains reflections upon the subject of Assistant Surgeons to Hospitals. The second contains remarks concerning circumstances of Distress, not within the provision of Hospitals: with an account of the Samaritan Society. 3. Observations relative to Hospitals. 4. Propositions for Triennial Parochial Sermons, and Collections from House to House; for the benefit of Hospitals and other Charitable Institutions. 5. Propositions
for

for appointing Representatives of the several Hospitals, and the other principal public Charities in the Metropolis; and Meetings accordingly*.

* The great anxiety of the author for the extension and improvement of surgical science, has lately been evinced, by his being one of the *liberal* few, who wanted to exercise despotic sway over the characters and property of the profession at large. By the favour of a correspondent, we expect shortly to have an opportunity of recording this transaction, so honourable to its authors, and equalled only, by the usurpation of the Fellows of the College of Physicians.

THE
MEDICAL and CHIRURGICAL
REVIEW.

OCTOBER, 1797.

ART. XXI. *Schola Medicinæ Universalis Nova, a*
GULIELMO ROWLEY.

(Continued from page 129.)

IN our last number we concluded with a view of
Adenology. The author next proceeds to con-
sider

Neurology

Or doctrine of the nerves ; in which the knowledge
of the antients and moderns on this subject is deliver-
ed with the usual brevity, in three columns, embel-
lished with twenty very beautiful engravings as large
as life, of the cerebrum, cerëbellum, medulla spinalis,
arteries, veins, ganglions and nervous ramifications.
The limits of our Review prevent us from entering
more fully into the merits of this part, but the great
importance of an accurate conception of the nerves,
their connections and distributions to various parts,
must be obvious. By their means, the symptoms aris-
ing from sympathy of parts in various diseases are
rendered intelligible, and many affections, otherwise
obscure, traced to their true and original causes. We
have thought proper to insert the following table of

VOL. IV. Q the

the comparative proportions of the human brain with that of other animals, as it exhibits at once the diligent researches of the author, the many writers he has consulted on this subject, and the happy and apposite selection he has made from their writings.

Animals.	Weight of Body.				Brain.				Proport. to the Body.			Authors.
	lb	3	3	gr	lb	3	3	gr				
Man,	140	—	—	—	4	—	—	—	1	to	35	Haller.
—	160	—	—	—	4	—	—	—	1	—	40	—
Boy 6 years old,	59	—	—	—	2	—	28	—	1	—	22	—
An Adult,	146	6	—	—	—	—	—	—	1	—	30	Pozzi.
Galeus Piscis,	25	—	—	—	—	—	2	—	1	—	1200	Redi.
Testudo Terrestris,	2	4	—	—	—	—	—	6	1	—	2240	Caldesi.
— Marinus,	79	—	—	—	—	$\frac{1}{6}$	—	—	1	—	5688	Ditto and Recd.
Canis Carcharius,	3000	—	—	—	—	$\frac{1}{3}$	—	—	1	—	12000	Steno.
Ditto,	26	—	—	—	—	—	—	—	1	—	2416	Ditto.
Tunny Fish,	390	—	—	—	—	—	1	—	1	—	37440	Redi.
A Lion,	243	—	—	—	—	5	10	8	1	—	615	Buffon.
A Cat,	—	76	—	—	—	—	7	24	1	—	82	Arlet.
A ditto,	8	—	—	—	—	—	6	32	1	—	156	Pozzi.
A Wolf,	64	—	—	—	—	4	3	4	1	—	230	Buffon.
A Dog,	62	—	—	—	—	—	26	—	1	—	305	Ditto.
Ditto,	—	—	—	—	—	—	—	—	1,154.	1,88.	1,54.	Arlet.
A Beaver,	30	—	—	—	—	—	—	—	1	—	290	Par fini.
Ditto,	17	—	—	—	—	—	6	—	1	—	36	Buffon.
An Elephant,	5000	—	—	—	10	—	—	—	1	—	500	—
An Ox,	1500	—	—	—	2	—	—	—	1	—	1154	Redi.
Ditto,	866	—	—	—	—	—	—	—	1	—	866	Buffon.
A Dromedary,	369	—	—	—	—	15	—	—	1	—	216	Ditto.
A Horse,	700	—	—	—	—	28	—	—	1	—	700	Ditto.
Ditto,	400	—	—	—	1	—	—	—	1	—	400	Ditto.
An Ass,	108	—	—	—	—	12	2	48	1	—	60	Ditto.
A Stag,	161	—	—	—	—	11	5	—	1	—	221	Buffon.
A Goat,	19	—	—	—	—	—	25	46	1	—	94	Arlet.
A Sheep,	57	—	—	—	—	—	$21\frac{1}{2}$	—	1	—	324	Buffon.
A Hare,	—	136	—	—	—	—	7	—	1	—	218	Arlet.
A Rabbit,	—	44	—	—	—	—	2	30	1	—	140	Ditto.
A Domestic Mouse,	—	—	36	—	—	—	—	34	1	—	76	Buffon.
A Common ditto,	—	—	—	324	—	—	—	$17\frac{1}{2}$	1	—	43	Ditto.
A Dormouse,	—	—	23	—	—	—	—	$28\frac{1}{2}$	1	—	53	Ditto.
A goose,	—	108	—	—	—	—	—	144	1	—	360	Haller.
An Eagle,	—	—	—	—	—	—	—	—	1	—	160	Borrich.
A Cock,	—	25	—	—	—	1	—	—	1	—	25	Pozzi.
A Sparrow,	—	—	—	380	—	—	—	21	1	—	15	Ditto.
A Canary Bird,	—	—	—	180	—	—	—	13	1	—	14	Ditto.
Apes,	5	9	—	—	—	—	16	90	1—11	1—28	1—107	Buffon.

Splanchnology,

Treats of the common integuments, viscera dedicated to the formation of chyle, the secretion of urine, the organs of generation, those of respiration, of the circulation of the blood, and the organs of the senses, illustrated with plates and references arranged in three columns, under the heads of—name and situation—structure and connection—use. The doctrine of vision is given at some length with engravings of the different arteries, humours, nerves, membranes, &c. executed with great accuracy and elegance. This part is concluded with an epitome of Splanchnology; the following will serve as a specimen of the author's concise method of instruction.

Lacteals.

The passages which convey the chyle from the intestines into the blood are

The lacteal vessels.
Receptaculum chyli, and
Thoracic duct.

The *Vasa lactea* or lacteal vessels are small veins which carry chyle. They arise from the small intestines, particularly from the jejunum and ileum, and a very few from the large intestines.

They are divided into the first and second order. The lacteal vessels of the first order arise in the intestines, pass between the duplicature of the mesentery, and run to the mesenteric glands. Those of the second order arise from the mesenteric glands, and go between the duplicature of the mesentery to the *receptaculum chyli*. The *receptaculum chyli* is a narrow sac lying on the bodies of the two superior lumbar vertebræ.

The thoracic duct is a canal which ascends from the *receptaculum chyli* through the posterior *hiatus* or opening of the diaphragm into the thorax, and passes

along the bodies of the dorsal vertebræ, as far as the left subclavian vein into which it empties itself.

The thoracic duct also receives in its passage the lymphatic vessels of almost the whole body.

The use of the lacteal vessels is, to carry the chyle from the intestines into the blood.

Hygrology,

Or doctrine of the fluids, which concludes the anatomical part of the Schola Medicinæ. It is somewhat singular that the learned author should here admit of the existence of a fluid in the nerves, as he professedly sets out with an entire exclusion of all fleeting hypotheses; and it is well known to all anatomists that the existence of a nervous fluid has never yet been demonstrated, *sed quandoque bonus dormitat Homerus.*

PHYSIOLOGY.

The explanation of the functions and actions of all the parts of the living or animated body.

This part is concise, yet ample as to utility. It is exhibited in a new point of view, in three columns, under the heads of—physiology—scholia—pathology; by which at one view are seen the doctrines of functions, the real causes of their actions, as far as they have been investigated; and the appearances after death from diseases, which form the foundation of morbid causes. The author has given seven engravings in this part of his work, and the whole is concluded with a concise, and perspicuous epitome of physiology for junior students, which contains the principal parts necessary to be remembered in the practice of physic. The following is an extract, to exhibit to the reader the manner in which the author has treated the actions and functions of the animated machine.

Physiology.

Physiology.

The human body is a machine compounded, in a wonderful manner, of many parts.

The most simple parts are the solids and fluids. In the human body the dry parts are, in weight about 20lb. and the fluids 180lb.

Scholia.

Various mechanical effects and mechanico-hydraulic operations prove it to be a machine.

It is to be lamented that anatomy does not disclose those component parts from which the intimate fabric of the body may be acquired, and chemistry affords but little information.

Pathology.

All parts agree by consent, for if one part of the machine be injured, the others sympathize.

From so great a congeries of different particles and powers acting on the body, it is not to be wondered at that the body should undergo many changes.

The whole of the physiological and pathological parts are continued according to this arrangement. The opinions of the most eminent writers are adduced, and accurate conclusions are drawn from the facts stated. It is all included in 100 pages.

The following extract on irritability, is taken from the epitome of physiology for the use of students.

On Irritability.

Irritability is a power innate in the muscular fibre, by which it contracts upon the application of a stimulus.

The cause of irritability is not known; it neither depends upon elasticity, the mind, nor on the nerves alone, but is placed in the muscular fibre.

The parts of the body which have muscular fibres are called irritable; as the heart, arteries, and veins, all the muscles, the diaphragm, stomach, and intestines, the urinary bladder, ureters, vagina, lacteal vessels, &c. &c. &c.

The parts which have no muscular fibres are not irritable, as the nerves, common integuments, and all membranes which are not muscular.

The heart is the most irritable part; then the stomach and intestines; next the diaphragm and other muscles follow in the scale of irritability.

The degree of irritability is likewise different according to the age, sex, temperament, mode of living, climate,

climate, state of health, idiosyncrasy, and nature of the animal.

The use of irritability.

First. Upon it depends the motion of all the voluntary and involuntary muscles.

Secondly. The action of the heart and vessels.

Thirdly. The peristaltic motion of the stomach and intestines.

The number of plates in the *Schola Medicinæ* as the author has termed it, though in our opinion it might with more propriety have been called *Schola Anatomix et Physiologiæ* amount to sixty six*. The bones and muscles, arterial and venal systems, are particularly designed for students in Surgery, and the whole work for those who wish to become physicians. The various plates of the nerves, their ganglions, connections, and plexuses, are particularly interesting to every physician who would wish to account for the various symptoms of diseases depending on nervous sympathy. The plan adopted by the author of exhibiting in a single view the anatomy, physiology, and pathology in parallel columns, is undoubtedly useful. The labour of consulting various writings separately, is thus rendered less necessary. Ignorance is too often preferred to science, when the latter cannot be obtained without laborious and long-continued exertions.

Thus have we taken a short and general view of this extensive publication ; we have no hesitation in recommending it to our readers as a work of great utility.

* Perhaps it is the intention of the author to continue the pathological, and therapeutic parts, in a future publication ; the propriety of the terms *Schola Medicinæ universalis nova* will then be readily admitted.

ART. XXII. ROLLO on *Diabetes*, &c.*(Continued from page 192.)*

IN our last number we entered fully into Dr. Rollo's theory and treatment of *Diabetes*; and though we could not deem his arguments in favour of the former altogether conclusive, we felt no hesitation in acknowledging the obligation practitioners owed him, for having pointed out a mode of cure superior to any of those in general use. We are now to notice the latter part of the work, containing an account of the results of the trials of various acids and other substances in the treatment of the lues venerea, by Mr. Cruickshank, Chemist to the Ordnance, and a Surgeon of Artillery.

It was supposed by Dr. Girtanner, Mr. Cruickshank observes, that the effects produced on the human body by the different preparations of mercury, were entirely owing to their combined oxygene, and that it was on the disengagement of this principle, which had a powerful action on the constitution producing the mercurial disease, that their antivenereal effects depended. We do not find, however, that Dr. Girtanner had ever put this assertion to the proof, by substituting other substances, containing a large proportion of oxygene, in place of mercury, in lues venerea.

We have already presented our readers with a view of Mr. Scott's Experiments on this subject*. To satisfy himself of the antisyphilitic property of the nitrous acid, and at the same time to discover how far this might be owing to its oxygene, the following trials were instituted.

* Vide Medical Review, No. XVIII. vol. III. page 487.

The first substances employed were acids, such as are known to contain much oxygene, and which part with it readily : of this kind are the nitrous, oxygenated muriatic, and citric acids. It is well known that the bases of these are different, and the only thing which they have in common is oxygene ; if therefore they should all produce the same, or nearly the same effect, on this disease, as well as on the constitution, the natural inference is, that this must depend upon their common principle.

Besides the substances above enumerated, trial was made with the oxygenated muriate of potash, a neutral salt containing much oxygene, and which parts with it very readily.

It is properly observed that most of the patients whose cases are here related, were kept in a ward set apart for the purpose, and where it was impossible, from the nature of a Military Hospital, they could procure any medicines, but such as were given to them. The cases were also selected, being primary affections, and such as were strongly and distinctly marked, and where no mercurial remedies had been employed.

In the first four cases the nitrous acid was employed with success. They are so much alike, and the effects of the remedy were so similar, that a sufficiently correct idea of the whole will be afforded by transcribing one.

Case 3. ‘ SNEED belonging to the Corps of Drivers, was admitted March 18th, with a large chancre on the prepuce, which he had perceived for about eight days, there was likewise a slight discharge from the urethra, accompanied with scalding, his eyes and general appearance indicated a scrophulous habit. He had taken no medicines.

‘ He was ordered a drachm of the concentrated nitrous acid, diluted with about a quart of water, which was to be taken at different times in the course of the day, and the chancre to be washed frequently with the

the weak solution of the acetite of lead already mentioned.

‘ *On the 20th*, A chronic inflammation of the eyes, to which he had for some time been subject, rather increased, accompanied with head-ach. He was desired to diminish the quantity of acid to half a drachm, and to take an ounce of the magnesia vitriolata.

‘ *On the 22d*, The inflammation in his eyes had considerably abated, and the appearance of the chancre was much more favourable; he was ordered to increase the quantity of the acid to $\mathfrak{z}\text{iss}$ daily.

‘ *On the 26th*, The chancre looked perfectly clean, and was free from pain; four ounces of blood drawn from his arm this day, had a healthy appearance. He had no preternatural thirst, but his tongue was white, and he had made a larger quantity of urine than usual.

‘ *On the 29th*, The chancre, although clean, did not seem disposed to heal, the acid was therefore increased to $\mathfrak{z}\text{ij}$ daily.

‘ *On the 3d April*, The chancre began to skin; feeling no very sensible effect from the acid, it was increased to $\mathfrak{z}\text{ijss}$ daily, this quantity he continued to the 14th, when the sore appearing to be stationary, it was again increased to $\mathfrak{z}\text{iiij}$.

‘ *On the 16th*, He complained much of thirst and temporary fits of sickness, his pulse was now quick, and his tongue furred, he made about three pints of urine in 24 hours; these symptoms being ascribed to the acid, it was diminished to $\mathfrak{z}\text{iiiss}$ daily.

‘ *On the 19th*, The chancre was nearly healed; the thirst and white tongue continued, but in other respects he was much better. The gonorrhœa had now entirely disappeared.

‘ *On the 22d*, The chancre was completely healed, but he continued the acid to the 30th.

‘ *On the 2d May*, He was discharged cured.

‘ This patient, although he took the acid regularly for such a length of time, (being in all 44 days) never perceived

perceived any thing like mercurial salivation, nor were his gums or teeth affected in any sensible degree, except now and then locally.'

The next four cases were treated with the oxygenated muriatic acid : and with equal success.

Case 7. ' COWEN, aged 19, belonging to the Corps of Drivers, was admitted *March 18th*, with several venereal chancres on the glands and prepuce ; there was likewise an incipient bubo in the right groin.

' He was ordered to take eight drops of the oxygenated muriatic acid four times a day, and to use the very dilute saturnine lotion already mentioned.

' On the 20th,—The chancre and bubo remaining much the same, the quantity of the acid was increased to 20 drops four times a day.

' On the 21st,—A manifest fluctuation was perceived in the bubo : he was desired to continue the acid, and to apply an emollient poultice to the bubo three times a day.

' On the 23d,—The bubo had burst and discharged a considerable quantity of pus ; the chancre looked much cleaner ; the dose of the acid was increased to 25 drops.

' On the 25th,—He began to complain of thirst and a slight degree of head-ach ; his tongue was white, but his pulse natural ; the dose of the acid was increased to 30 drops.

' On the 26th,—The head-ach increased, accompanied with much languor, a white tongue, quick pulse and great thirst : 12 ounces of blood were drawn from his arm, on the surface of which, after cooling, there was a thick crust of coagulable lymph ; the dose of the acid was diminished to 25 drops.

' On the 27th,—He was much easier, being greatly relieved by the blood-letting.

' On the 28th,—The chancre and bubo remaining stationary, the quantity of the acid was increased to 30 drops four times a day.

‘ On the 30th,—The chancre and bubo looked very clean, and disposed to heal; he still complained of thirst, but felt no other sensible effect from the medicine; the dose of the acid was increased to 35 drops.

‘ On the 1st of April,—The quantity of the acid was further increased to 40 drops, four times a day.

‘ On the 3d,—He complained much of soreness in his mouth, but there was little or no redness in the gums, and no disposition to spit.

‘ On the 5th,—The appearance of both chancre and bubo was much more favourable, and although he complained of his teeth and gums, the dose of the acid was increased to 45 drops.

‘ On the 7th,—The bubo was nearly healed, and on the 9th was entirely closed up; the chancres likewise were perfectly clean and free from pain.

‘ On the 10th,—The quantity of the acid was increased to 50 drops four times a day. He still complained of thirst, but felt no other inconvenience from the acid.

‘ On the 17th,—The chancres shewed a disposition to heal; his thirst continued, and he made about 3 quarts of pale urine in 24 hours.

‘ On the 19th,—The chancres were nearly healed, and on the 22d were perfectly skinned over. He continued the acid, however, to the 30th, and was discharged cured *May 5th.*’

The three following were cured by the lemon-juice, or the citric acid.

‘ CAMPBELL, a Driver, aged 24 years, was admitted into the Hospital, *March 12th*, with several chancres on the prepuce and glans, and which he had perceived for eight or ten days; there was also a slight degree of paraphymosis: from his own account he had taken no medicines.

‘ He was ordered to take an ounce of lemon juice, diluted with two ounces of water, three times a day,
and

and to keep the parts clean with the usual weak saturnine lotion.

‘ On the 15th,—The chancres looked a little cleaner; perceiving no sensible effects from the acid, the quantity was increased to an ounce four times a day.

‘ March 17th,—The chancres were evidently cleaner and less painful, but a tumor began to make its appearance in the right groin, in consequence of which the acid was increased to five ounces daily, and cold applications, consisting of a solution of the acetite or sugar of lead were frequently applied to the tumor.

‘ On the 19th,—The tumor in the groin had greatly diminished, and was much less painful; his appetite was now considerably increased, and he was sensible that he made much more urine than usual.

‘ March the 22d,—The chancre looked perfectly clean and disposed to heal, and the tumor on the groin was less painful. He was desired to continue the lemon juice, with the cold applications, and to have a number of small electric sparks drawn from the tumor once a day.

‘ On the 26th,—The chancre was nearly healed, and the tumor in the groin greatly diminished; he still continued the lemon juice, cold applications and electricity.

‘ On the 29th,—The chancre was healed, and the enlargement of the glands in the groin hardly perceptible. He never perceived any sensible effect from the medicine, except an increase in the quantity of his urine, and some improvement in his appetite.

‘ On the 31st,—The tumor in the groin entirely disappeared, but the lemon juice was continued to April 6th.

‘ April 13th,—There appeared an excoriation in the place where the chancre was, and the tumor in the groin began to return. The acid was resumed, and cold applications had recourse to as before.

‘ On the 19th,—The excoriated part was completely

pletely skinned, and the enlargement of the glands rather less. The quantity of the acid was increased to eight ounces in the day.

‘ On the 22d,—The tumor had entirely subsided, and he continued well in other respects. The acid was persevered in, however, until the 28th, when he was discharged cured.

‘ On June 10th,—He remained perfectly free from any venereal complaint.’

Next follow five cases treated successfully by the oxygenated muriate of potash.

Case 14. ‘ PARTNER, a Driver belonging to the Brigade of Horse Artillery, aged 20, was admitted *May 8th*, with several venereal chancres on the glands and prepuce, and the latter was considerably thickened. These had made their appearance for two or three weeks before he applied to his surgeon. He had taken no medicines.

‘ Three grains of the oxygenated muriate of potash were ordered to be taken four times a day, and the sores to be frequently washed with the usual saturnine solution.

‘ On the 10th,—Feeling no sensible effect from the medicine, the quantity was increased to five grains four times a day.

‘ On the 12th,—The chancres looked considerably cleaner, and were less painful; his tongue was a little white in the middle, but he did not complain of thirst; he was desired to take seven grains of the oxygenated muriate of potash four times a day, and on the 18th the dose was increased to eight grains.

‘ *May 22d*,—The chancres were nearly healed, and the quantity of the salt was increased to 36 grains in the day.

‘ On the 29th,—They were all completely healed, but he continued the medicine to the 4th of *June*, and was discharged cured on the 6th.

‘ In

‘ In this case there was no sensible effect produced by the salt during the whole cure, except a slight fur on the tongue, and at times a greater inclination to drink than usual.’

No particular regimen or diet was prescribed in any of the above cases.

The following observations of Mr. Cruickshank illustrate the effects of these new remedies, and afford no improbable rationale of their mode of operation. They appear to overturn the remark of Mr. Scott, that a salivation resembling the mercurial was amongst the effects of the nitrous acid.

‘ It would appear,’ Mr. Cruickshank observes, ‘ from the cases just related, that the nitrous, citric, oxygenated muriatic acids, and more particularly the oxygenated muriate of potash, are capable of removing the primary symptoms of the Lues Venerea, and that too without producing any thing like mercurial salivation. How far these cures may be permanent, or whether the secondary symptoms may not hereafter supervene, can only be determined by further experience and observation; as the primary symptoms, however, have not yet returned in any one case, we should suppose that these have been completely removed; the only doubt therefore which can reasonably remain, must relate to the secondary ones; but if in a few instances even these should make their appearance at some future period, it can form no solid objection to this mode of treatment, as similar consequences frequently follow the use of mercury. (*See Hunter on the Venereal Disease.*)

‘ In our first trials it was judged proper to confine ourselves to cases of primary affections; these being always less equivocal and doubtful; we intend, however, when an opportunity shall offer, to employ the same substances in the most advanced states of the disease,

disease, particularly where mercury has either failed, or had little effect.

‘ Before we attempt to explain the *modus operandi* of these remedies, it may be proper to take a review of their effects on the constitution in general, as observed in the above cases.

‘ The general effects produced by the acids, were an increase of appetite, an augmentation in the quantity of urine, more or less thirst, white tongue, and an increased action of the whole system, most generally accompanied with fizy blood. The Oxygenated Muriatic Acid appeared to be the most active, and the Citric Acid the least so. The Nitrous Acid in a few instances likewise affected the bowels. The Oxygenated Muriate of Potash produced thirst, the white tongue and the increased action of the system, in a more remarkable degree than the acids, but there was less alteration perceived in the quantity of the urine, and the appetite. The effects therefore induced in common by these different substances, appear to be a general increased action of the whole system, accompanied for the most part with fizy blood.

‘ That this increased action is occasioned by the disengagement of oxygene, is rendered highly probable from the following considerations.

‘ 1st. It is now sufficiently known that oxygene is the substance which imparts to the different acids their activity, their tendency to combination, and other characteristic properties, their radicals being all different, and possessed of powers either opposite, or in no respect similar to those of the compounds or acids.

‘ 2d. The Oxygenated Muriate of Potash appears to be in fact, nothing more than the common muriate, combined with nearly half its weight of oxygene; for if this substance be exposed to heat in a retort, a very large quantity of the purest oxygene gas is disengaged, what remains undecomposed being the common Muriate of Potash, amounting to a little better than half the weight of the salt employed. Now
it

it must be allowed that the common Muriate, at least in the doses given upon the present occasion, could not have produced the remarkable effects, which we have ascribed to the Oxygenated Muriate. This difference of effect must therefore be owing to its combined oxygene, a circumstance rendered the more probable when we reflect that a similar action is produced by the union of the same substance with the radicals of the acids.

‘ 3d. When oxygene gas has been inhaled into the lungs, a general increased action of the whole system has succeeded, and that sometimes to a very remarkable degree. (*See Beddoes on the Medical Qualities of Factitious Airs, &c.*)

‘ From these considerations therefore we would infer, that the general or constitutional effects which have been observed to follow the use of these remedies, must be ascribed to the disengagement of their oxygene.

‘ How then does this increased action cure the local sores produced by the venereal virus? It is true that all general affections of the system suspend for a time the local ones, the consequence of this poison, or must we have recourse to some specific powers, as has generally been the case in explaining the action of mercury? We are inclined to adopt the first hypothesis, and to suppose, with Mr. Hunter, that mercury, as well as the remedies under consideration, cure this disease by exciting a new action in the system, in consequence of which the syphilitic one is suspended; and this suspension being continued for a sufficient length of time, the whole of the virus from the change which the fluids naturally undergo, is at last completely expelled from the body.

‘ With regard to the last hypothesis, we may observe, that there can be little or no doubt that if oxygene could be applied directly to this poison, it would destroy it specifically, in the same manner as it destroys many others; but it is extremely difficult to conceive

conceive how this substance, so prone to combination, should, when taken in by the mouth, be applied in its pure state to a remote local sore, in a quantity sufficient to produce any sensible effect; and this objection applies still more strongly to mercurial remedies, because in some of these, as the *Mercur. Muriat. Corrosiv.* and *Mitis*, the quantity of oxygene disengaged must be extremely small. From these considerations, therefore, we are inclined to adopt the opinion of Mr. Hunter, and to suppose that these different remedies produce their effects, by exciting a new disease, or action in the system; and that this action, for the reasons already given, is produced by the disengagement of their oxygene. If this theory be correct, we have no more reason to expect relapses after a course of these acids, &c. than after one of mercury; nay, if we should suppose the virus to be absorbed, and carried into the general mass of circulation, where it must be exposed to the action of the disengaged oxygene, the patient, upon the whole, might be considered as more secure, for there will be a greater chance in this case of its complete destruction and eradication. This is a point, however, which experience alone can determine.

If these remedies should be found, from further experience, to be adequate to the cure of this disease in all its stages, the advantages which they possess over mercury are so great and important, that they must soon supersede its use. They require no particular regimen, no confinement, are not accompanied with any disagreeable consequences during their operation, and they seem in general to produce their effects more quickly and certainly, particularly the *Oxygenated Muriate of Potash*. But what we consider to be of far greater importance is, that they do not appear to excite the action of other diseases, more especially scrophula; one of the greatest inconveniences attending a mercurial course, and by which many have lost their constitutions, and several their

lives. Mercury, besides its occasionally bringing other diseases into action, has also very deleterious effects upon particular habits, and this has been so remarkable in certain cases, that, from the necessity of occasionally leaving it off, cures have been not only protracted, but the complaint has had an opportunity of running through all its different stages, by which the constitution has too often suffered an irreparable injury. No disagreeable circumstances of this kind are likely to follow the use of these acids, or the oxygenated muriate of potash, for although they were given in several scrophulous habits, this disease was not brought into action, nor did the health suffer in the least, on the contrary, it in general seemed to be improved.

‘ Although we suppose that mercury and the acids, &c. cure the venereal disease by exciting some peculiar action in the system, the nature of these we nevertheless conceive to be perfectly different; the mercurial action must no doubt be owing to the metal, and not to oxygene, for all the mercurial preparations, whether oxyds or combinations with acids, produce salivation, ulceration of the tongue and mouth, &c. very much alike; effects which we have shewn are not occasioned by oxygene disengaged under different circumstances. The mercurial action is also accompanied with an impaired appetite and general wasting, the reverse of which takes place during the action of the other remedies. Indeed the white tongue and fizy blood appear to be the only circumstances common to both, for in all other respects they differ essentially. We know it has been said that the nitrous acid produces salivation, but this is certainly a mistake, which has probably arisen from confounding the local and temporary foreness in the gums and teeth, occasioned by the acid, with the inflammation and ulceration produced by mercury; for in no one instance, even where the common concentrated acid was given to the quantity of three drachms

drachms daily, did we perceive any thing like mercurial salivation. The mercurial action we therefore conceive must be owing to the metal rendered active by its union with the acids, &c.; but that of the acids and oxygenated muriate of potash to the disengagement of their oxygene.

Of the different substances which we have yet employed, we would prefer the nitrous acid and the oxygenated muriate of potash; the first, because it may be readily procured, and seems in most cases sufficiently active, and the last on account of its being by far the most efficacious and certain, producing in most instances an almost immediate effect upon the disease, without injuring the constitution. The nitrous acid which we have hitherto used, has never been perfectly pure, nor highly concentrated, in short it was nothing more than the common fuming acid of the shops. The nitric acid has not been tried, nor do we conceive that it would possess any superior advantages. This medicine generally produces a sensible effect in 6 or 8 days, and frequently accomplishes a cure in 15 or 16. We have generally begun with a drachm in the day, diluted with about a pint and a half of water; but where the acid is only of the usual strength, and free from any metallic impregnation, a drachm and half, or even two drachms, we believe will seldom be found too much. We have never exceeded three drachms in the day, but we do not by any means suppose this to be the greatest quantity which can be given with safety and advantage. Of the oxygenated muriate of potash, we have generally begun with three or four grains, although in general six or eight may be given at first four times a day; where it produces sickness or griping, (which is sometimes the case) the dose should be diminished. We have never yet exceeded the quantity of 15 or 16 grains four times a day, not but that more might have been given, had it ever been found necessary. In one very recent case this salt has succeeded where the ni-

trous acid appeared to have had little or no effect, although given for some time to the quantity of three drachms daily.

‘ One of the greatest objections to the oxygenated muriate is, the difficulty of preparing and purifying it; nor is there any process yet known, by which it can be manufactured and sold at a low price; for these reasons we have no doubt that a very impure kind will be offered for sale, the consequence of which must be, want of success and disappointment to those who employ it.

‘ Its purity may be judged of by attending to the following circumstances; the crystals should be shining flat rhomboidal scales or tablets, without any mixture of cubes; they should have little or no taste, and when thrown upon red-hot coals should detonate rapidly, with a very vivid flame and without any decrepitation; but when the crystals feel rough, have a bitter saltish taste, and decrepitate much when thrown upon live coals, we may be certain that they contain a considerable proportion of the common muriate of potash, which is always formed in great quantity during the process. This salt, when perfectly pure, does not decompose the nitrates of silver or mercury. But this degree of purity is not necessary when it is to be employed as a medicine; only when completely or nearly freed from the common muriate, a smaller dose will be sufficient, and much less thirst excited.

‘ The oxygenated muriatic acid appears likewise to be a very efficacious remedy in this complaint; but in the way in which it is usually prepared, it always contains manganese, and not unfrequently lead, particularly when the manganese employed has been brought from Bristol, for the manganese from the Mendip-hills very generally contains more or less of this metal. In every case where either the oxygenated muriate of potash or oxygenated muriatic acid are prepared in a medicinal point of view, nothing but the purest crystallized manganese should be used, that
from

from Upton-pine, near Exeter, is the best. The acid given in the four cases related above, was procured by adding the common muriatic acid to the oxygenated muriate of potash, by this means a very large quantity of the purest oxygenated acid may be quickly obtained; and it is this process we have been in the habit of using for some time, where a very pure acid for delicate chemical experiments has been required.

‘ Instead of making the gas pass through water in the usual way, the oxygenated salt was sometimes simply added to the common muriatic acid, diluted with about an equal bulk of water; in this case the salt was slowly decomposed, and the acid converted into the oxygenated acid. About a drachm of the salt, when pure, was found to be sufficient for three ounces of the dilute acid: of this we have given to the extent of half an ounce in the day, always beginning, however, with a much smaller quantity.’

Subjoined we have some additional facts in testimony of the efficacy of the nitrous acid: communicated by several Surgeons of the Artillery.

Dr. Irwin relates two cases treated with success. The symptoms of one were, phymosis, and a discharge from beneath the prepuce, but without chancre: the other was a large tumour in the groin, unaccompanied by any chancre, or other complaint. It is not clear that either of these cases were venereal.

Dr. Jameson next mentions the results of five cases he had treated with the same remedy.

‘ GUNNER SHERRAR, 1st Battalion, admitted into Hospital, with bubo, 10th March, 1797, began the acid the same day, and was discharged cured 26th of April following.

‘ GUNNER KAIN, 4th Battalion, admitted 10th March, with chancres, discharged cured 26th of May.

‘ GUNNER EVANS, 1st Battalion, admitted 10th March, with chancre, discharged cured 16th April.

‘ GUNNER MORE, 1st Battalion, admitted 10th March, with chancre, discharged cured 19th April.

‘ GUNNER CLARK, 1st Battalion, admitted 10th March, with chancre, discharged cured 11th April.’

One drachm of the acid, diluted in a wine-bottleful of water, was given to each patient daily; but in Kain and Clark’s cases the quantity was gradually increased to two drachms.

White tongue, quick hard pulse, and other appearances of increased action, generally supervened about the seventh day. No soreness or other appearance in the mouth was observed, than what might be expected merely from the sharpness or astringency of the acid.

The appetite continued unimpaired in the five cases above noticed, and no particular effect on the bowels was produced. But in two other instances, after being continued several days, the acid was obliged to be discontinued on account of its producing a burning sensation in the stomach, and that when the quantity was reduced to less than half a drachm daily.

To the above are added eight cases, all primary affections, cured by the nitrous acid. The sensible effects were the following:

The appetite was almost invariably increased: The urine was increased in quantity, clear, and of a light straw colour: costiveness for the most part prevailed; the mouth and tongue were white and moist, but nothing like ptyalism took place: the blood drawn at different periods exhibited the same appearance as when under active inflammation, the coagulum being covered with a tough coat of coagulable lymph.

From the view we have given above, it must appear, that the evidence in favour of the nitrous acid, and the other substances enumerated, is strong, and entitled

entitled to particular attention. We earnestly hope it will be confirmed by future experience : for there are undoubtedly many constitutions in which mercury excites alarming effects, and where, of course, a substitute equally powerful in removing the disease, and with less hurtful properties, is much to be desired.

The work concludes with a short account of a morbid poison acting on sores, and of the method of destroying it. The ulcer here noticed is to be distinguished from the Erysipelatous inflammation arising in sores, and also from the sore which arises in Hospitals from something peculiar to those situations. The following is Dr. Rollo's description of this new, or at least, unobserved, species of sore. It was found that a sore of any extent, in the promising state of healthy cicatrization, was liable to have a solitary ulceration on its edge, of unequal dimensions, the size varying, being smaller or larger than a pea.

‘ This distinct little ulcer was of a darkish colour, its edges jagged, its bottom unequal and rugged, and discharged a thin matter, having a peculiar smell. Such was the earliest state in which it was perceived, but probably it might have been distinguishable sooner. The disappearance of the sore in the hospital deprived us of a more minute and early inquiry.

‘ The day after the little ulcer had been discovered, it had acquired the size of a sixpence or a shilling, extending itself every way, even on the skin as well as on the surface of the former sore ; the discharge was now changed, having become thickish, of a whitish colour, intermixed with dark shades, and adhering strongly to the surface of the part ; the peculiarity of the smell continued, and was become more offensive.

‘ In another day the ulcer had spread farther ; and on other parts of the former sore might probably be perceived small ulcerations of the same appearance and kind as those of the first discovery, and which went on extending until they united.

‘ Five or six days from the appearance of the small ulcer, or ulceration, when it had extended (or, by its union with the other ulcerations,) over one third of the former fore, with pain and redness in the course of the lymphatics, and the glands through which they led, with enlargement of them, general indisposition of body became evident. This consisted in nausea, loss of appetite, heat of skin, a very small and quick pulse, extreme irritability, a whitish tongue, and thirst. When these symptoms took place the ulceration rapidly went on, extending beyond the limits of the former fore, and destroying the adjacent parts. In this state of the fore the parts were puffed and bloody, accompanied with much uneasiness, having a burning and lancinating sensation, and the action frequently terminated in apparent gangrene. Sometimes, however, the ulcerating part remained covered with the thick adhesive matter, and gradually, without any other apparent change, assumed the healing state.

‘ The operation of the poison in slowness or rapidity, probably depended on some constitutional circumstance, as it was not in all of equal degrees of facility. These sores, which spread rapidly and extensively to sloughing, and even to gangrene, from one, two, or more small ulcerations very likely happened in those who might be said to have a constitutional susceptibility; while on the contrary in those where the ulcerations continued distinct, and remained covered with a thick, whitish and adhesive matter, without acquiring the sloughing and gangrenous states, their constitutions had no favourable tendency to the operation of the poison.

‘ The first favourable change was in the appearance of suppuration on the edges of the fore, with a separation of dead parts, which went on until the whole were thrown off, and then healthy granulation, and cicatrification took place.

‘ The

‘ The most singular phenomena in the progress of this sore consisted in the various actions, which were not unfrequently perceived in it at the same time, and which seemed to depend on constitutional differences. We have seen the ulcerating, suppurating, and cicatrizing states going on at the same time in one sore. It was not unusual for the ulcerating process to be checked before it had extended over the whole sore, when the former cicatrizing parts went on without interruption, and the ulcerating part having assumed the disposition to healthy action, arrived at the cicatrizing point, and proceeded with the others to skinning.

‘ The smallness of the ulcer, the appearance of its edge and base, its ulcerative tendency, the absorption of its matter affecting the lymphatic vessels and glands, and then the whole system, pointed out the operation of a morbid poison.

‘ The action of this poison seemed to be limited and confined to specific effects, the first were local, producing only general affection by a more extensive operation on the sore, and which in a certain time terminated in the healthful separation of parts, granulation and cicatrization, and a state of constitutional convalescence.

‘ Sores having specific actions, as the venereal, scrophulous, and variolous, resisted this poison, and in the hospital were not affected, though such patients were in the same wards.

‘ Some men in quarters, one with a blistered part, another with a cut on the outer ear, and another with a sore on the leg, besides several others were affected with this poison. The men in the same wards were not generally affected with it; those with specific sores, or with sores of small extent, and having little discharge, though laying within two feet of the men under the action of the poison, escaped.’

Conceiving that a morbid poison was in these cases applied locally to a part of the sore, which, like the venereal poison, had the power of assimilation, and
thus

thus augmenting its power; as also of being absorbed, producing general effects on the system, and a reaction on the sore, the author determined to adopt local means of treatment, consisting in the chemical destruction of the poison, and parts under its direct action, and in exciting a new action.

The oxygenated muriatic acid, and the nitrates of silver*† and mercury, were the applications employed, and latterly the oxygenated muriatic acid. When either of these was applied four or five times, the little ulcer soon put on the suppurating state and granulated, as the sore went on cicatrizing.

With respect to the origin of this poison, Dr. Rollo thinks it not improbable, that the discharge of a sore remaining confined, or some of it suffered to remain long on its edges, may undergo such changes as to produce a matter possessing new properties of apparently a poisonous nature and effect. On several sores, but one in particular, where a considerable quantity of finely-powdered nitrated mercury had been sprinkled, in 12 hours, the time of the next dressing, the mercury formed a shining crust, was firm, and appeared as if a portion of the mercury had been revived. This, he thinks, might be owing to hepatic gas on the surface of the sore.

We forbear to offer any opinion on this subject at present. Morbid poisons have hitherto attracted so little of the attention of the medical world, that the subject may be considered as yet in its infancy.‡

The following is Mr. Cruickshank's method of procuring the oxygenated muriatic gas. It consists in intimately mixing two parts of common salt, and one of crystallized manganese, previously reduced to pow-

*† *Olim* lunar caustic and red precipitate.

‡ We know of no writer that has treated of morbid poisons with clearness and precision, except Dr. Adams, who professes to have chiefly pursued the track pointed out by the late Mr. Hunter.—Vide *Med. Rev.* VOL. II. page 213.

der. Two ounces of this compound are introduced into a small basin: about an ounce of water is then added, and afterwards an ounce and a half of the concentrated vitriolic or sulphuric acid at different times, so as to preserve a gradual discharge of the oxygenated muriatic acid gas. One of these basins is sufficient for a ward or room containing five or six beds, and more must be employed according to the size of the apartment.

ARTICLE XXIII. *Philosophical Transactions of the Royal Society of London.* Part I. for 1797.

THE first paper in the present volume connected with the subject of Medicine, is the CROONIAN *Lecture*, by Mr. HOME, in which some of the morbid actions of the straight muscles and cornea of the Eye are explained, and their treatment considered; read before the Society in November 1796.

In two former Lectures Mr. Home explained the manner in which the eye adjusted itself for the seeing objects at different distances*. Before treating of the diseases of the straight muscles of the eye, he explains the effects which their natural actions are intended to produce.

The diseases which arise from morbid actions of the straight muscles are three: viz. an inability to see near objects distinctly; double vision; and squinting. Each of these is separately considered. The originality and value of the observations induce us to give them at length.

Of the Inability to see near objects distinctly.

‘ As that action of the muscles which produces the adjustment of the eye to near objects, consists of the greatest degree of contraction usually exerted by them,

* For an account of these see Med. Rev. vol. II. p. 260 and 325.
it

it puts the fibres into a very uneasy state; which while in health they support with the utmost difficulty, and when affected by disease are unable to sustain: under these last circumstances near objects cannot be seen at all without considerable pain, and never distinctly, the eye not remaining a sufficient time adjusted, for that purpose. I cannot better explain the nature of this disease, than by giving an account of the symptoms which occurred in the following case.

‘ A gentleman, forty years of age, naturally short-sighted, of a delicate irritable habit from his infancy, never able to bear much bodily fatigue, being always soon tired by walking, or other exercises that required muscular exertion, had the following affection of his eyes:

‘ His sight had been very perfect till he was nineteen years of age; at that time he resided in a part of the country where the ground consisted principally of white chalk, which produced an unpleasant glare, and his constant amusement, both by day-light, and candle-light, was drawing, which he frequently pursued so far as to fatigue his eyes. While thus employed, his complaints had their origin. The first symptoms were those of being unable to look long at any object without pain, and feeling uneasiness when exposed to strong light. The eyes to all appearance were free from disease, having no unusual redness, nor any purulent, or watery discharge. The plan that was first adopted for his relief consisted in lowering the system, both constitutionally and locally; but this treatment rendered him more irritable, and made his eyes rather worse than before; he therefore, after a trial of eight years, in different means of this kind, gave them entirely up. For the next five years, in which nothing was done to the eyes, the symptoms appeared to have been stationary; but at the end of that period, his mind suffering from an uncommon degree of anxiety, the complaints in his eyes were evidently rendered worse; this effect, however, de-
pended

pended solely on the state of the mind, for as soon as ever he recovered from his distress, the eyes also returned to their former state. In this condition I first saw him in the year 1795, and, at that time, his eyes had no external mark of disease, and were moved by the muscles in every direction without the smallest uneasiness. He could look at any thing that was at some distance, as the furniture in the room, the passing objects, &c. with perfect ease; but whenever he attempted to adjust the eyes to near objects, the effort gave so much pain, that although he succeeded in seeing them, he was almost immediately obliged to desist. Every attempt to write or read gave so much pain, that he became unable to do either; but as soon as the strain produced by such an effort was taken off, he was at ease. His disease therefore consisted in a want of power to adjust the eyes to near objects for a sufficient length of time to render them distinct, which of course incapacitated him from reading or writing. The cause of this disease appears to me to be a morbid affection of the straight muscles of the eyes, which allows them to perform all their intermediate contractions as usual, but not the extreme degrees of contraction without considerable pain.

‘ As these symptoms have not, I believe, been before accounted for in this way, it may appear to many who have not seen similar affections of other muscles, that the present opinion is rather theoretical than practical; it will therefore be satisfactory to illustrate this disease in the muscles of the eye, by examples of the same kind of morbid action in other muscles, more within the reach of common observation. The following instances all refer to the muscles of the fore-arm and hand, employed in actions with which every one is familiar, and shew that these muscles are liable to be affected in the same manner as the muscles of the eye.

‘ A gentleman forty-six years of age, naturally of an irritable habit, which had been much increased by

a long residence in the East Indies, was, about eight years ago, in a situation of great responsibility in that country. He was much engaged in writing, and previous to the sailing of a vessel for England, had, with a view to finish some dispatches of importance, written incessantly for a great many hours; the immediate effects of this exertion were simply fatigue, and stiffness in the muscles; but when he again attempted to employ the muscles in that action, he felt a nervous pain in the fore-arm, which was so severe as to oblige him to desist. This pain gave him considerable alarm, from the notion of its being of a paralytic nature, and many attempts were made to remove it. Recourse was had to electricity, and several other stimulating applications, but these always aggravated the symptoms, and they still continue. The circumstance in this case which is peculiarly applicable to my present purpose is, that the pain is only felt in the act of writing, the common motions of the fingers and thumb not giving the smallest uneasiness.

‘ A gentleman about forty-six years of age, of a very irritable constitution, who had been in the habit of dealing cards for whole evenings together, was engaged in this employment one night for six hours: the weather was very warm, and he walked home in a state of perspiration, and went to bed. The windows of his apartment, which faced the north, and was directly opposite the foot of the bed, had been left open; the bed curtains were also undrawn. In the course of the night there was a sudden change in the weather from hot to cold, and the wind having shifted to the north, blew directly upon the right arm, which was accidentally exposed. In the morning when he awoke his arm was in a very uneasy state. This however went off; but there was a pain in the muscles situated between the thumb and the fore-finger, and those of the fore-arm, which continued, and gave him great uneasiness. It was supposed to be paralytic, blisters were applied to the origin of the
nerves

nerves at the shoulder, and a visit to Bath was agreed upon as a necessary measure. The effects of the blister rather increased the complaint, which raised a doubt about its nature, and I found upon a careful investigation, that particular muscles only were affected, which suggested an inquiry into the use that had been made of them. This inquiry led to a discovery of the real nature of the complaint, as only those muscles used in dealing cards were particularly affected. They were not in pain while at rest, but were unable to bear the least action without considerable uneasiness. This was greater at sometimes, than others; and although a year has now elapsed since the complaint came on, it is not entirely removed.

‘ One of the principal tavern keepers in London was rendered very uneasy by a pain in the fore-arm, close to the elbow, which at times was very severe. Upon examining the parts the pain was evidently not in the joint, but appeared to arise from an affection of the supinator brevis muscle, as the motion of that muscle gave pain. This I stated to him, but told him I was at a loss to find out in what way that part could have been injured; this was readily cleared up, when he informed me that the greatest pain he felt was in drawing claret corks, which he did with a sudden jerk or motion of the arm, and it was immediately after an exertion of this kind that he had first felt the complaint. It was clear from this account that this particular muscle had been strained, and was rendered unfit to bear any violent action.

‘ These cases will be sufficient to explain, that a muscle, or set of muscles, may be unable to perform those actions which require the greatest exertion, although capable of performing all the others.

‘ If then we consider the disease which causes the inability to see near objects as a strain upon the muscles, and compare it with the same disease in other muscles, there will be no difficulty in accounting
ing

ing for the bad effects produced by every thing that irritates, or weakens the parts themselves, or the general habit:—It will follow, that such a mode of practice should be laid aside, and those means adopted, by which the parts can be soothed in their sensations, and quieted and strengthened in their actions, since in that way only the muscular fibres can possibly recover their tone.

OF DOUBLE VISION.

Many opinions have been advanced to account for the single appearance of objects when seen by both eyes.

‘ Dr. Reid of Glasgow, who has taken much pains on this subject, has treated it with ingenuity, and a great deal of knowledge; the opinion he has advanced of subjects appearing single when the impressions from the object are made upon parts of the retina of the two eyes which correspond with each other, and double whenever that is not the case, is very strongly confirmed by the following observations upon double vision.

‘ There are two circumstances under which double vision takes place: one where the muscles of the eye do not correspond in their action, and therefore the two eyes do not bear equally upon the object; the other, where some change has taken place in the refracting media of one eye which prevents the pencils of light from impressing the corresponding parts of the retina of both eyes. Instances of double vision produced by these two modes have fallen under my notice.

‘ It has been long ascertained by experiments, that when the eyes are not turned equally towards an object, it appears double, and the disease in the muscles which produces this effect is the subject which I now mean to consider. It will at the same time, be proper to distinguish this kind of double vision from that which is produced by a change in the refracting media of the eye; and this will be best done by explaining

plaining the nature of those changes in consequence of which it occurs.

‘ When one eye has had the crystalline lens extracted, the other remaining perfect, objects seen by both eyes will appear double.

‘ This is a fact which has been noticed in a former lecture, in treating of the adjustment of the eye. At first it appeared difficult to account for the double vision, as the two images were entirely separate from each other. It could not arise from the absence of the lens, as that would not alter the situation of the images on the retina; and the two images being of different dimensions on similar parts of the retina, would appear to be one before the other. As the operation of extracting the lens in no respect affects the muscles of the eye, the action of the muscles would be the same as before, and therefore could not contribute to produce this effect.

‘ The double vision in this instance appears to arise from the cornea of the eye which had undergone the operation being rendered flatter than the other, and giving a different direction to the rays of light, so as to form an image on a part of the retina not corresponding with the part impressed in the other eye.

‘ If the crystalline lens be extracted from both eyes, and the person applies a convex glass to one eye only, and looks at an object, it will appear double; but if the convex glass is moved in different directions before the cornea, there will be found one situation in which it makes the object single. In this instance the corneas and muscles of the two eyes are under exactly the same circumstances; and when the centre of the convex glass is directly in the axis of vision, the image on the retina of that eye is formed on parts that correspond with those impressed in the other; but whenever the centre of the convex glass is out of the axis of vision this does not take place, and the object appears double.

‘ The experiments of which these observations are the result, were made upon the eyes of a lady who had lost the sight of both, by opacities in the crystalline lenses ; but by submitting to have the lenses extracted recovered her sight, and had afterwards an uncommon degree of distinct vision ; which made her a very favourable subject for experiments of this kind.

‘ Having explained the two different modes by which double vision may take place in consequence of operations that render the refracting media of the eye imperfect, I shall now consider it when produced by a morbid action of the muscles.

‘ Several cases of this kind have come within my own knowledge, and I am induced to dwell upon the subject, because some of them had been considered as arising from a defect in the organ, and erroneously treated. The fact has been long established by philosophers, that a defect in the muscles may produce such a disease, but as other causes may likewise do the same, I believe that such a defect has not been practically considered, as one of the diseases of the eye, certainly not as a very common one, which undoubtedly it will be found.

‘ The first case of this kind which led me to pay attention to the subject, was that of a friend, a lieutenant-colonel of engineers, who was in perfect health, shooting moor-game upon his own estate in Scotland. He was very much surprised towards the evening of a fatiguing day’s sport, to find all at once that every thing appeared double, his gun, his horse, and the road were all double. This appearance distressed him exceedingly, and he became alarmed lest he should not find his way home ; in this, however, he succeeded by giving the reins to his horse.

After a night’s rest the double vision was very much gone off, and in two or three days he went again to the moors, when his complaint returned, in a more violent degree. He went to Edinburgh for the benefit

nefit of medical advice. The difeafe was referred to the eye itfelf, and treated accordingly; the head was fhaved, blistered, and bled with leeches. He was put under a courfe of mercury, and kept upon a very fpare diet. This plan was found to aggravate the fymptoms; he therefore, after giving it a fufficient trial, returned home in defpair, and fhut himfelf up in his own houfe. He gradually left off all medicine, and lived as ufual. His fight was during the whole time, perfectly clear, and at the fame time near objects appeared fingle; at three yards they became double, and by increafing the diftance they feparated farther from each other. When he looked at an object, it was perceived by a by-ftander, that, the two eyes were not equally directed to it. The complaint was moft violent in the morning, and became better after dinner, when he had drank a few glaffes of wine. It continued for nearly a twelve-month, and gradually went off.

‘ The above account of the difeafe was given to me by the patient himfelf, who is an intelligent man, very foon after his recovery. It was confidered as a curious difeafe, and I had feveral converfations with Mr. Ramfden refpecting it. The more we confidered it, the more we were convinced that the difeafe had been entirely in the mufcles; and this I explained to the patient at the time as my opinion.

‘ It is now about eight years ago, and the gentleman has had no return of the difeafe; but for two or three years paff has loft in a great meafure the ufe of his lower extremities, being unable to walk alone.

‘ Some time after the recovery of this gentleman, a houfe painter, who had worked a good deal in white lead, was admitted a patient in St. George’s Hofpital, on account of a fever attended with a violent head-ach. Upon recovering from the fever he was very much diftrefsed at feeing every thing double; and, as the fever was entirely gone, he was put under my care for this affection of his eyes. Up-

on an inquiry into his complaints, I found them exactly to correspond with the case I have just described, and therefore treated them as arising entirely from an affection of the muscles. I bound up one eye and left the other open; he now saw objects single, and very distinctly, but looking at them gave him pain in the eye, and brought on head-ach. This led me to believe that I had erroneously tied up the sound eye; the bandage was therefore removed to the other eye, and that which had been bound up was left open. He now saw objects without pain, or the smallest uneasiness. He was thus kept with one eye confined for a week, after which the bandage was laid aside; the disease proved to be entirely gone, nor did it return in the smallest degree while he remained in the Hospital. Rest alone had been sufficient to allow the muscles to recover their strength, and thus produced a cure.

‘ A repetition of cases, I am very sensible, is not the most pleasing mode of conveying information except to medical men; I have therefore selected those only which are absolutely necessary to explain the different phænomena of the diseased states of the eye at present under consideration. The cases brought forward with this view, are rather to be looked upon as the detail of so many experiments made in the investigation of the diseases, than as histories of particular patients.

‘ When muscles are strained or over fatigued, to put them in an easy state, and confine them from motion, is the first object of attention; and this practice is no less applicable to the muscles of the eye, than those of other parts.

Of Squinting.

‘ Whenever the motions of the two eyes differ from one another, whether in a less degree, so as to produce double vision, or in a greater, turning one eye entirely from the object, the disease has been called

called squinting. What I mean at present to consider under this head is, where the deviation of one of the eyes from the axis of vision is greater than that by which objects are made to appear double ; so that in this view, double vision is an intermediate state between single vision with both eyes, and squinting. Squinting has been very generally believed to arise entirely from an inability in the muscles to direct the eye properly to the object. There is however, probably no original defect in the muscles ; certainly none sufficient to sanction such an opinion ; since the muscles of a squinting eye have the power of giving it any direction, but cannot do it without some degree of effort. The defect, therefore, appears to be principally in the eye itself, which is too imperfect to assist the other in producing distinct vision. From this imperfection, the muscles have not the same guide to direct them as those of the other eye ; and, therefore, although perfectly formed, cannot make their actions exactly correspond with them.

‘ In a squinting person both eyes certainly do not see the object looked at. This is evident to a bystander, who is able to determine that the direction of one of the eyes differs so much from that of the other, that it is impossible for the rays of light from any object to fall upon the retinas of both ; and therefore that one eye does not see the object.

‘ The same thing may be proved in another way ; for since a small deviation in the direction of either eye from the axis of vision, produces double vision, and the object does not appear double, any greater deviation must have the same effect, only increasing the distance between the two images, till it becomes so great that one eye only is directed to the object. In squinting there is evidently a greater deviation from the axis of vision than in double vision, and the object does not appear double ; it is therefore not seen by both eyes.

‘ The circumstance of those who squint having an imperfect eye, is corroborated by all the well authenticated observations which have been made upon persons who have a confirmed squint, in which all agree in stating, that one of the eyes is too imperfect to see distinctly.

‘ From these observations, it would be natural to suppose, that the loss of sight in one eye, should produce the appearance of squinting, which is by no means the case; for when that happens, the motions of the two eyes continue to correspond, although not exactly; but the deviation is not equal to that which is met with in squinting; it is nearer to that which occurs in double vision.

‘ The reason why the imperfect eye of a squinting person is directed from the object, while a blind one in its motions follows the other, is, that probably, the indistinct vision of the imperfect eye prevents the muscles from directing it to the object with the same accuracy as those of the other do; this small deviation from the axis of vision renders the object double, and interferes with the vision of the perfect eye; and it is in the effort to get rid of the confused image, that the muscles acquire a habit of neglecting to use the imperfect eye. It may also happen, when the eye is so imperfect as not to receive a correct image of any object, that it may have been neglected from the beginning. Distinct vision being once obtained by the perfect eye, the end is answered, and the mind is never afterwards led to employ the other.

‘ The direction the eye takes under either of these circumstances, is inwards towards the nose, the adductor muscle being stronger, shorter, and its course more in a straight line, than any of the other muscles of the eye.

‘ That the eye, when not accurately directed to the object produces confused vision, and is for that reason turned away, appears to be confirmed by the case of a patient, from whom I had extracted the
crystalline

crystalline lens. This man, at first saw objects double, in a manner which extremely distressed him; but, after some months, acquired the habit of neglecting to employ the imperfect eye, and no longer found any inconvenience.

‘ The different degrees of squinting appear to be in proportion to the imperfection in the vision of the eye, and, in some instances, the person is capable of seeing distant objects with both eyes, and only squints when looking at near ones. The following case is of this kind.

‘ A young Lady, twenty-three years of age, has been observed to squint from her infancy; this has not been considered by her friends as the consequence of any defect in her eyes, but as arising from the cradle in which she lay having been so situated, with respect to the light, as to attract her notice in one particular direction, so much as to occasion a cast in one eye. Her eyes are apparently both perfect, when she looks with attention at an object some yards distant, she has no squint, but if her eyes are not engaged by any object, or a very near one, she squints to a considerable degree.

‘ Upon being asked if she saw objects distinctly with both eyes, she said certainly, but that one was stronger than the other. To ascertain the truth of this, I covered the strong eye and gave her a book to read; to her astonishment, she found she could not distinguish a letter, or any other near object. More distant objects she could see, but not distinctly. When she looked at a bunch of small keys in the door of a book-case, about twelve feet from her, she could see the bunch of keys, but could not tell how many there were.

‘ To see how far the two eyes had the same focus, she was desired to look at an object in the field of a microscope, and it was found that she saw most distinctly with both eyes at the same focal distance, although the object was more considerably distinct to

the perfect eye than to the other ; so that the focuses of the two eyes were the same.

‘ I desired her to cover the perfect eye, and endeavour to acquire an adjustment of the other to near objects, by practising the use of that alone. At first she was unable to see at all with the imperfect eye, but in some weeks she has improved so much as to be able to work at her needle with it ; this she cannot do long at any one time, the eye being soon fatigued and requiring rest, though without giving pain. She is unable to read with the imperfect eye. These trials have only been made in the course of two months, for a few hours in the day, and her friends thinks she squints less frequently than she did.

‘ In this case it is probable that the imperfect eye never had acquired the power of adjustment to near objects ; for as distinct vision seems necessary to direct the muscles in their actions, the perfect eye would require less practice to adjust itself than the other ; and as soon as the near object became distinct to one eye, no information being conveyed to the mind of the failure in the other, all efforts to render its adjustment perfect would be at an end, and it would ever after be neglected, while the perfect eye was in use.

‘ Squinting, according to these observations, appears to arise from the vision in one eye being obscure. It may, however, be acquired in a degree by children who have the lenses of their eyes of different focuses ; or have one eye less perfect in its vision than the other ; living constantly with those who do squint, and, by imitation, acquiring a habit of neglecting to use one eye.

‘ The power of squinting voluntarily may also be acquired at any age. This we find to be true in persons who look much through telescopes ; they are led to employ the mind entirely to one eye, not seeing at all with the other. In this case the neglected eye will at first, from habit, follow the other ; but in time, if frequently

frequently neglected, may lose this restraint, and be moved in another direction. Some astronomers, whose eyes have been much used in this way, are said to be able to squint at pleasure.

‘ From this view of squinting, it takes place under the three following circumstances: where one eye has only an indistinct vision; where both eyes are capable of seeing objects, but the one less perfect in itself than the other; and where the muscles of one eye have acquired from practice a power of moving it independently of the other.

‘ Where squinting arises from an absolute imperfection in the eye there can be no cure.

‘ Where it arises from weakness only in the sight of one eye, it may, in some instances, be got the better of; but to effect the cure there is only one mode, which is that of confining the person to the use of the weak eye by covering the other; in this way the muscles, from constant use, will become perfect in the habit of directing the eye upon the object; gain strength in that action, and acquire a power of adjusting the eye; when these are established in a sufficient degree, the other eye may be set at liberty. The time that will be necessary for the cure must depend upon the degree of weakness of the sight, and the length of time the muscles have been left to themselves; for it is with difficulty they acquire an increased degree of action after having been long habituated to a more limited contraction.

*Of the Nature of the Cornea, some of its Diseases,
and Mode of Treatment.*

‘ The cornea of the eye, as the name implies, has been considered of a cuticular nature. Baron Haller compares it to the nails in a soft state, and believes that in its regeneration it resembles the epidermis.

‘ This opinion is founded upon its want of sensibility, and having no vessels which carry red blood; the appearance it puts on when preserved in spirits,
which

which is exactly similar to the nails at their roots, probably confirmed this supposition.

‘ As the cuticle is devoid of life, it is only under the influence of disease during its growth ; once formed, it continues unchanged. The cornea, were it of the same nature, would be equally incapable of taking on new actions from disease, or any other cause ; but we find on the contrary, that it undergoes many changes, which exactly correspond with those which the living parts of an animal body go through, when under the influence of disease ; from which I am induced to consider it alive ; and I find many of the present teachers of anatomy are of the same opinion.

‘ To prove that the cornea has life, it is necessary, as a previous step, to shew, that being supplied with vessels which carry red blood, and having sensibility, are not essential to the possession of the living principle ; for this purpose, all that is required is to demonstrate that there are living parts which have neither the one nor the other. Tendons and ligaments in a natural state are instances of this kind. That these parts are not supplied with red blood is obvious to the eye of a common observer ; no illustrations will be therefore required to substantiate that proof. That they are not endued with sensibility was, I believe, first taught by the late Dr. Wm. Hunter, who published the following account of it.

‘ In a case where the last joint of the ring-finger had been torn off, half an inch of the tendon of the flexor muscle projected beyond the stump ; this it was thought right to remove ; and to ascertain whether it was possessed of sensibility, the following experiment was made : a piece of cord the thickness of the tendon was passed round the wrist, and along the side of the finger, so as to project even with the end of the tendon ; the man was then told to turn away his head, and tell which of the two were cut through ; the tendon was divided, and the man declared it was the string, not having felt the smallest degree of pain.

‘ This

‘ This proof is satisfactory ; but that the cornea is possessed of life, by no means rests upon any negative proofs ; which I shall now endeavour to explain.

‘ The cornea in its structure is made up of membranous laminae. One of these appears to be a portion of the tunica conjunctiva, but it is either so extremely thin, or so intimately connected with the lamina next to it, as not to admit of more than a very partial separation from it ; another lamina, as I have shewn in a former lecture, is a continuation of the tendons of the four straight muscles ; but as both these laminae have the same properties as the other parts of the cornea, and are not to be distinguished from them, they must be considered in every respect as a part.

‘ The tunica conjunctiva and tendons, a continuation of which forms these anterior laminae of the cornea are allowed to be living parts, and the portions that make part of the cornea are not to be distinguished by their structure from the rest ; we must therefore suppose them to be also composed of living parts.

‘ When the cornea is wounded it unites, like other living parts, by the first intention. If the wound is made by a clean cutting instrument, the cicatrix is small ; but if by a blunt instrument, it is larger, extending further into the neighbouring parts of the cornea, and a greater quantity of the coagulating lymph of the blood being required to procure the union.

‘ Although the cornea, when divided in the operation for extracting the crystalline lens, commonly unite by the first intention, this union is in some cases attended with inflammation, which produces an opacity of the cornea ; in other cases the inflammation exceeds the limits of adhesion, and the whole internal cavity of the eye proceeds to a state of suppuration. These stages of inflammation are only met with in parts possessed of life.

‘ It is true, that an injury may be committed to the cornea, such as a small piece of metal sticking in it, which

which from the indolent nature of its substance, shall remain there for months without producing inflammation; but an irritation of a less violent kind upon the edge of the cornea, by which the tunica conjunctiva is also affected, will produce inflammation upon that vascular membrane, which may extend itself upon the cornea; for it is impossible that the vessels of the cornea, which naturally carry only lymph or serum, can be made to carry red blood, unless the irritation extends to some neighbouring parts supplied with red blood.

‘ That vessels carrying red blood have been met with upon the cornea in a diseased state, is doubted by Haller; he does not altogether deny it, but the assertion, he says, requires proof, as he is not satisfied with the authorities of Petit and others, whom he quotes upon the subject.

‘ It is so common a thing in inflammations of the eye to have the branches of the arteries of the tunica conjunctiva continued upon the cornea, that every practical surgeon must have met with it. In some instances of this kind, which have come immediately under my care, I have examined these vessels with a magnifying glass, and have seen distinctly small arteries from the tunica conjunctiva, uniting upon the cornea, into a common trunk larger than any of the branches that supplied it, and this trunk has sent off other branches distributed over the cornea.

‘ These vessels may by some physiologists, be supposed to be continued upon the lamina of the tunica conjunctiva which is spread over the cornea; this however, is not the case, as they pass behind it, and therefore belong as much to the lamina under them as that which is over them, and, in many instances of disease, vessels carrying red blood are met with in the substance of the cornea still deeper seated. This has been seen by Professor Richter, who says he has divided a thickened cornea, and the vessels in its substance have poured out red blood.

‘ The

‘ The cornea is not only capable of uniting by the first intention, inflaming and suppurating, but when the inflammation is carried to a great height, a portion of its substance is sometimes removed by ulceration, and the ulcer so formed is filled up by coagulating lymph, which afterwards becomes cornea, acquiring the necessary property of transparency. This new formed part is weaker than the rest of the cornea, and commonly projects beyond it, forming one species of staphyloma; in the substance of the cornea, round the basis of the staphyloma, I have frequently seen vessels carrying red blood.

‘ From the opinion of the cornea being devoid of life, the opacities which are found to take place on it have been considered apart from common surgery, and entrusted to the care of men who are supposed to have made the diseases of the eye their particular study.

‘ According to this theory, the opacity was supposed to arise from a film of inanimate matter laid over the cornea, and upon that idea very acrid and irritating applications were employed with a view of scraping it off, or destroying it, as powdered glass, powdered sugar, &c. and such applications being of service, confirmed the opinion which gave rise to the practice.

‘ Having shewn that the cornea is possessed of life, I shall now point out the parts of the body it resembles in structure, and to which it bears the greatest analogy, both in its healthy actions, and those arising from disease; and endeavour, by comparing them, to establish some general principle which will explain the beneficial effects of irritating applications in cases of inflammation and opacity of the cornea.

‘ The cornea, from some experiments and observations mentioned in a former lecture, appears to be similar in structure and use to the elastic ligaments. It has all the common properties of ligaments; those of elasticity and transparency being superadded.

‘ Like

Like other ligaments it can be divided into laminae, in an healthy state has no vessels carrying red blood, and devoid of sensibility; when divided it readily admits of union, when inflamed acquires a great degree of sensibility; is slow in its powers of resolution, and when the inflammation subsides, the coagulating lymph deposited in the adhesive stage of inflammation remains, producing an opacity which it is afterwards found difficult to remove.

All ligamentous parts of which I consider the cornea to be one, are weak in their vital powers; this arises from their having no vessels carrying red blood; when they inflame, which is a state of increased action, they therefore require a different mode of treatment from the other parts of the body, whose vital powers are strong, in consequence of being largely supplied with red blood.

The truly healthy inflammation requires an increased action in the parts affected; and if this either from weakness or indolence, is not kept up, the inflammation does not go rapidly through its stages, but remains in a state between resolution and suppuration. In ligamentous structures the actions must therefore be roused and supported when under inflammation to promote resolution, and prevent the parts from falling into an indolent diseased state. This is, however, attended with difficulty, and they too often become considerably thickened by a deposition of coagulating lymph during the adhesive state of inflammation, which in the cornea renders it opaque. The thickening of the parts remains after the inflammation is gone, and can only be removed by absorption, which is best effected by the application of very stimulating medicines.

Upon these principles all ligamentous structures require a treatment peculiar to themselves, which may be illustrated both in inflammations of joints and of the cornea of the eye; the applications made use of

of with the greatest advantage in both cases being of a very stimulating kind.

‘ The advantages attending this mode of treating the cornea, were probably discovered by accident; and when they were ascertained, it established itself as a very general practice. It must, however, in the hands of those who had no general principle to direct their practice, have been sometimes applied without benefit, and must sometimes have been injurious.

‘ It is an extremely curious circumstance, and probably the most so that can be met with in the history of medicine, that a local application should have been discovered to be of service in a particular disease 2,513 years ago, that the same application, or those of a similar kind, should have been in very general use ever since, and in all that time no rational principle on which such medicines produced their beneficial effects should have been ascertained. This appears, from the following account, to have been the case with respect to stimulating applications to the cornea in a diseased state, and can only be accounted for by a want of knowledge of the structure of the parts, which is an argument of uncommon weight in favour of the study of anatomy.

‘ In the Apocrypha we find, in the book of Tobit, a very circumstantial account of an opacity of the cornea successfully treated by stimulating applications. It is there stated as a miracle, but we have the authority of Jerome, a Father of the church, who wrote in the fourth century, to say “the church reads the books of Tobit, &c. for examples of life and instruction of manners, but doth not establish any doctrine by them.” We shall therefore consider the account which is given in extracts from the book of Tobit in that view. Tob. chap. vi. ver. 2.

“ When Tobias went down to wash himself in the river Tigris, a fish leaped out of the river and would have devoured him.”

Ver.

Ver. 4. "The angel of the Lord told him to take out the gall, and put it up in safety."

Ver. 6. "Tobias asked the angel what was the use of the gall."

Ver. 8. As for the gall (said the angel) it is good to anoint a man who hath whiteness in his eyes, and he shall be healed."

Chap. xi. Ver. 2. "Tobias took hold of his father, and strake off the gall in his father's eyes, saying, Be of good hope my father."

Ver. 12. "And when his eyes began to smart, he rubbed them."

Ver. 13. "And the whiteness pilled away from the corners of his eyes, and when he saw his son he fell upon his neck"*

' In conversing with my friend Dr. Ruffel on the manner in which the Arabians treat inflammations and opacities of the cornea, he very kindly favoured me with the following account.

"Respecting the practice of the Arabians in disorders of the eyes, I find nothing of consequence in my papers. An oculist among them is a distinct profession; and the collyria they apply are secret compositions, which pass hereditarily from father to son. The Arabian writers give a number of recipes, most of which are taken from Galen and the Greek physicians. One composition in Avicenna contains the gall of a crow, crane, partridge, goat, &c. At Aleppo, the gall of the sheet-fish, *silurus glanis* of *Linnaeus*, was in particular request; but it should be remarked, that they always add to the gall other ingredients, it being a material circumstance in that country, that a recipe should consist of a multitude of ingredients. What often struck me in their practice was their successful application of sharp or acrid

* In a note we have an account of a case of opacity of the cornea cured by the application of the gall of a barbel, published in the Annual Register for the year 1768.

remedies, at a time I should have been induced to make use of the mildest emollient applications."

' From this account given by Dr. Ruffel, there can be no doubt of gall having continued in use, as an application to the eye amongst the Eastern nations, from the time of Tobit down to the present day.

' I have in the course of the last three years made many trials of the effects of gall, as an application to the cornea in a diseased state. I have used it pure and diluted, and compared its effects with those of the unguentum hydrargyri nitrati, and the solution of the argentum nitratum; and find in old cases of opacity, it is in some instances, the best application. The gall of quadrupeds, in these trials, gave more pain than the gall of fish. The painful sensation was very severe for an hour or two, and then went off. It is proper to observe, that the beneficial effects it produces appear to be in proportion to the local violence at the time of its application.

' The practice of applying very stimulating applications to the cornea has stood the test of twenty five centuries; it can therefore require no support. The object of the present observations has been to explain the principle upon which the beneficial effects depend, a knowledge of which may serve as a guide to regulate our practice. It will guard us against using such medicines while the inflammatory action is increasing, it will lead us to adopt them the moment the inflammation appears to be at a stand, and not postpone this practice till an indolent unhealthy state takes place, which too often terminates in opacities no applications can afterwards remove.

ART. XXIV. *Medical Facts and Observations.*
Vol. VII. Octavo, 339 pages, price 6s. JOHNSON, London. 1797.

OF the 5th and 6th volumes of this work, having been published since the commencement of our Review, we have already given a full account*. The present collection contains 27 articles, several of which we have before noticed. Of the rest we shall give an account proportionate to their originality and importance.

Art. 1. Practical Observations on the Treatment of Acute Diseases ; particularly those of the West Indies. By William Wright, M. D. *Physician to the Forces, in the West Indies.* The subject that first engages the author's attention is the *Typhus*, nervous, ship, or jail fever, as differently styled by different writers. Great praise is bestowed on the application of cold water to the body in this disease, in the manner which has been adopted and recommended by Dr. Gregory of Edinburgh, viz. by washing the body with a sponge, dipped in cold water and vinegar, at least twice a day. The earlier it is had recourse to the better: it reduces the frequency of the pulse, and speedily removes delirium and petechiæ. Some caution, however, Dr. Wright remarks, is necessary in its application. In all cases where there are visceral obstructions, or where there is reason to suspect topical inflammation of the viscera, cold bathing does much mischief.

In fevers when topical inflammation, internally, has taken place, Dr. Wright advises immediate recourse to be had to calomel, either by itself, or joined

* Vide Medical Review, Vol. I. p. 285, and vol. II. p. 182.

with antimonials or opiates. The quantity of calomel is proportioned to the violence of the disorder, and the danger the patient is in. In this country (Scotland) he has seldom exceeded five or six grains daily; but in the West Indies he has given twenty grains in twenty-four hours, with the most marked success.

It has been asserted that in tropical countries fevers are not contagious; this the author absolutely denies. The yellow fever which made such destructive ravages in the West Indies and in America, and which Dr. Rush classed with remittents, he has no doubt was Typhus, exalted to a great degree of virulence from climate, situation, and other adventitious circumstances. The remitting fevers of warm countries, he remarks, are well known not to be contagious.

Dr. Wright mentions the information he received from Drs. Clark and Drummond respecting the yellow fever. Their great reliance was on mercury, which saved four out of five where it was fully employed. Dr. Drummond in Jamaica gave two hundred grains of calomel in the space of three days, besides friction with strong mercurial ointment, with success. With respect to bleeding, in Jamaica the lancet is now laid aside: as some young men who were seized with the yellow fever, and were bled on the day of the attack, died in a few hours after. The American practice, therefore, will not succeed in the West Indies.

‘ In cases where the strength of the patient is much reduced, the strongest wines, or even brandy itself, must be freely used. Dr. Drummond tells me, that in such dangerous stages of the disease, even when the black vomiting has come on, he has given the pepper medicine* with success. The use of this medicine

* This is composed of three grains of powder of Cayenne pepper, made into a pill with mucilage, and may be given every two or three hours; but unless the pill is well coated with dough, or white wafer, it will be difficult to persuade the patient to swallow a second dose.

continued till a generous warmth takes place, which must be kept up so long as the debility or the vomiting last ; but, in the mean time, the use of mercury must be pushed vigorously, till the mouth is affected, and till there are evident appearances of a resolution of the disorder, and an abatement of the most violent symptoms.'

In such stages of Typhus, where there were petechiæ, a difficulty of swallowing, or a sense of choaking ; or where apthæ were present, or there was a great irregularity of pulse, æther was found very beneficial.

In the Treatment of Intermittents, Dr. Wright has found much advantage from following Dr. Lind's plan of giving a large dose of laudanum in the hot fit. Where the bark has failed, and visceral obstructions have been suspected, calomel, in small doses, has generally succeeded.

In acute Hepatitis, the author endeavours to obviate the phlogistic diathesis by a moderate bleeding, gentle laxatives, and diluting drinks. If a resolution is not by these means speedily brought about, he loses no time in exhibiting mercury internally and externally, till the disease is conquered : this he has done with uniform success for 27 years. Chronic Hepatitis is in general removed by a grain of calomel every night for a fortnight.

In pleurifies and peripneumonies which are very common and fatal diseases in tropical climates, one or two moderate bleedings only are advised. A blister to the side affected gives great relief ; and the antimonial powder, even in such doses as to excite full vomiting is recommended. Where the disorder resists these, large and frequent doses of calomel are exhibited, as long as the violent symptoms continue.

Several

Several judicious remarks occur on Dysentery. When epidemic, attended with great prostration of strength, and other symptoms of putrescency, he is solicitous to purge off the offending matter, and afterwards to correct the disposition to putrescency, by the use of the vegetable acid. Where the fever has been considerable, the tongue dry and parched, the gripes severe, and the stools very frequent, with scarcely any thing else than blood or mucus, he has prescribed with good success calomel in doses of five grains, every six hours, till a copious stool or two has been procured; and afterwards in smaller doses, with occasional opiates, while the fever and gripes have continued.

Art 2. Facts relative to the Origin of Intermittent Fevers, by Dr. BEDDOES. The object of these is to prove that marsh miasmata are not exclusively the exciting cause of Intermittents, as supposed by the late Dr. Cullen. Three instances are here related evidently brought on by the application of cold. They occurred at the time of a hard frost, when there could be no marsh-miasmata floating.

Art. 3. Observations on the Nature of Corns, and the means of removing them: by Mr. CARLISLE, Surgeon to the Westminster Hospital. Some observations on the structure and formation of the cuticle are premised. ‘ Mr. Carlisle then goes on to remark, that it is capable of undergoing many changes whilst it is attached to the living body, without its being afterwards thrown off. It may be distended with water to a very unnatural thickness, as on the hands of persons working in warm water; but will recover its former state again in a few hours, after leaving off the use of the water.

‘ The cuticle may be scorched with fire, or coagulated, so that it never resumes its natural appearance

again, and yet it shall continue to cleave to the living body.

‘ The cuticle seems also capable of putrefaction whilst upon the living body.

‘ In persons who are liable to much perspiration about their feet, and who are at the same time not in the habit of washing them often, I have many times observed the thick cuticle upon the under surfaces of the toes, and at their junction with the sole of the foot, in a very putrid state, dissolving and rotting until the cutis itself was exposed so much as to bleed.

‘ The putrefaction of this substance is accompanied with a peculiar smell, and not the matter of perspiration, as is vulgarly supposed.

‘ The connection between the living body and the cuticle may be destroyed by a variety of stimulating applications, and even particular states of the body produce untimely separation of this covering; for example, œdema, some fevers, violent courses of mercury, &c. When the separation of the cuticle from the living body is produced rapidly, a quantity of the serum of the blood is thrown out between it and the living parts, as in the cases of scalds, burns, blisters, &c. This is a curious system of defence. When the separation of the cuticle is effected more slowly, it sometimes happens that the new layer of cuticle is formed before the old one loses its hold, and in this way the substances of the two will be interwoven together; the accumulation of successive layers clinging together in this manner forms a corn. The application of moderate pressure seems to be conducive both to the growth of new cuticle, and to the adhesion of the new with the old.

‘ A corn will often originate from a small blister, produced by severe pressure, more especially when the blister is accompanied with much inflammation of the skin beneath. In this case the coagulating lymph is thrown out into the blister, and becomes the basis of a corn.

‘ The

‘ The natural process is for the old cuticle to be continually shed in the form of scales as soon as the new is formed.

‘ When the cuticle is suddenly removed from the living parts, as in the cases of blisters, &c. before mentioned, the vessels of the skin throw out a quantity of the serum of the blood ; they also throw out the coagulating lymph, which appears to be the substance from which the cuticle is formed. When the parts beneath the cuticle are essentially injured by the stimulus which separated the cuticle, it often follows that the lymph is thrown out very irregularly, forming ridges in some places, and unnaturally thin coverings in others. These phenomena appear to depend upon the unequal actions of the living parts below. A strong stimulating application laid over the whole extent of the sore is a remedy for this.

‘ The cuticle, when first formed, is of a curdly cheese-like substance, and the thickness of each layer depends upon the quantity of this substance thrown out at one time, which is very irregular.

‘ The natural cuticle is a mask of the surfaces of the living body to which it is attached.

‘ The forming of cuticle upon a naked living surface, appears to be hastened by the application of some substances which coagulate the animal mucilages, such as æther and alcohol. Stimulating the living parts is also often necessary, in order to produce that degree of action in the vessels which attends the throwing out of the coagulating lymph. The substance of the cuticle may be dissolved by the application of Caustic Alkali, or *Aqua Kali pur.*

‘ The most usual occasion of corns is the application of moderate and long-continued pressure. In this case a process is set up to defend the living sensible parts against the injury, by thickening the insensible covering or cuticle. In this instance, however, the natural means made use of do not answer the end, and the reason might be given. The pressure is com-

monly made at first upon a small surface ; the thickening of the cuticle increases this pressure, by diminishing the space between the pressing substance and the living part. Still, however, new layers of cuticle are formed, and the true skin begins to be removed out of the way, by absorption, thus allowing the diseased mass of cuticle to sink below the level of the living parts: proceeding upon this plan a cone of cuticle is formed with its apex protruded among sensible substances, so that upon pressing or moving the part considerable pain ensues.

‘ The difference of the forms of these bodies has given rise to a variety of vulgar names, which it is not necessary to enumerate, because these observations are intended to apply to every possible species of the disease, upon natural principles. There are, however two kinds of corns, which differ in many respects from each other ; the one is called the hard, the other the soft corn ; the latter is always situated in a perspiring part, which seems to be the occasion of its peculiarity.

‘ It must be understood, that although the substance of a corn is composed of the same kind of matter as the cuticle, yet it is not modelled in the same manner ; the layers are thicker, are often cheesy in parts, and generally admit of the evaporation of a part of the water naturally combined with them ; so that they form hard bodies, much more brittle and inflexible than the natural cuticle.

‘ Sometimes inflammation takes place in the skin at the root of a corn, and the diseased cuticle is thus dislodged by a small abscess : this is the natural cure.

‘ There are many rational methods of curing the disease called corns. The most common is by cutting or paring them ; this never answers any farther purpose than temporary relief, because the remaining cuticle is so diseased, that it does not recover the
power,

power of shedding the old external lamina, whilst new layers are forming underneath; and from this cause the corn will be soon renewed. Another objection to cutting is the impossibility of completely paring the corn when its under surface is conical or irregular, so as to leave only one layer of cuticle remaining, which ought to be done, else the corn will grow again. In some particular corns, however, the connection between the diseased substance and the skin is so slight, that a line may be perceived where they unite, and with a blunt pointed instrument the corn may be separated and completely turned out; but this is only in some old corns.

‘ One method of curing of corns radically is by dissolving them. After having softened them by steeping the part in warm water, apply the liquid caustic alkali, or *aqua kali pur*, upon a piece of sponge, keeping it on about a quarter of an hour, or until a little pain is felt. A portion, if not all the corn will be so dissolved by this fluid, as to be easily rubbed off with a coarse cloth, and this process must be repeated until all the diseased cuticle is removed. The management of this application requires some address, and often considerable patience and perseverance; so that many people are not disposed to adopt it; and, besides, if it be not followed up until the cutis itself is naked, there is no certainty of our having entirely destroyed the diseased structure.

‘ In the above manner, hard and thick nails, which are producing inconvenience, may be also softened, and the troublesome part removed.

‘ Another method of cure which is, however far more tedious and inconvenient, is by the application of pieces of adhesive plaster, spread upon leather, each piece having a round hole cut in it, so as to admit the corn to pass through. In this manner pieces of the plaster are placed over each other, until they rise above the level of the top of the corn; and a shoe

shoe is to be worn of a bigness sufficient to contain the whole, so that the pressure shall fall, by means of these plasters, upon the skin immediately surrounding the bases of the corns. The consequence of this is the protusion of the sunk root of the corn, and it is shed like natural cuticle. It requires that these plasters be kept constantly applied for the space of from three to six weeks, before they answer the purpose. Very adhesive plaster, spread upon firm buckskin leather, seems to suit this end exceedingly well. This method is always effectual, if judiciously applied and persevered in; and it is not attended with any hazard of ill consequences.

‘ A third method of curing corns is by the application of a blister. The corn should be first pared as close as possible, and a piece of blistering plaster applied, big enough to cover the base of the corn, and to pass a little way over the sound cuticle. The blister requires, in general, to remain upon the part for twenty-four hours, and should be continued longer, provided it neither produces vesication nor pain. The common blistering plaster is not strong enough; it requires the addition of a little Euphorbium. If much inflammation attends, it may often be removed by the application of a simple milk and bread poultice. This method is particularly objectionable in old persons, and in bad constitutions, because violent irritation produced in the extremities of the body, in such cases, does not always terminate well.

‘ The method of cure by blistering is, however, one of the most effectual and expeditious, and perhaps the only one for the soft corns.’

It has been justly matter of reproach to regular practitioners, that they have neglected to bestow their attention on many of the more trifling complaints to which the body is liable, deeming them probably of too small moment to deserve their care. The consequence not unfrequently has been no small detriment to the sufferer. Mr. Carlisle’s manner of treating the
present

present subject evinces, that it is not too trifling in its nature to afford both interest and instruction.

Art. 4. Some Observations relative to the Angustura Bark, by Dr. T. M. Winterbottom. Physician to the Settlement at Sierra Leone. In several comparative trials made with the Angustura and common Peruvian Barks, in regard to their febrifuge and tonic powers, the author has always found the former to be equally efficacious with the latter, and that frequently in smaller doses. In those cases, however, where it is necessary to give this medicine in substance, and in large doses, as in the remittent fever, with a view to put a stop to the return of the paroxysm, the Angustura Bark could not be always given for a sufficient time, without exciting nausea; but where this effect was not produced, Dr. Winterbottom trusted the course of a remittent fever to the Angustura with the same confidence as to the Peruvian Bark, which last is usually considered as a specific for that disease. It must, however, be observed, he remarks, that in the cases of fever where the Angustura Bark was employed, the doses were perhaps larger than might be absolutely necessary; but the fever of that country is usually so rapid in its progress, that if the paroxysms be not soon put a stop to, the remissions become obscure, or scarcely perceptible, and the patient is suddenly carried off. He did not venture, therefore, to use it in smaller doses than what he had from experience found necessary to be given of the Peruvian Bark; nor did he consider his patient as secure unless he had taken, during the time of a remission, as much of it as his stomach would bear.

Towards the decline of a fever, when debility is the chief symptom, he prefers the use of the Angustura Bark in infusion, to a farther continuance of the Peruvian; this change is generally very agreeable to the patient; the infusion sits easy on the stomach, and is attended with the most beneficial effects in restoring the strength

strength and appetite. The Angustura Bark, likewise, has been found very effectual in the cure of intermittents.

Dysenteries, Dr. W. remarks, are not very frequent, nor obstinate at Sierra Leone. In those cases, however, where the symptoms still continued to harass the patient, after the bowels had been sufficiently opened by saline and mercurial purgatives, the Angustura Bark never failed to put a stop to the complaint. In diarrhœa this bark was found extremely useful.

Several cases are adduced in support of the character above given of the Angustura Bark.

Art. 5. An Account of a remarkable Affection of the Testes: by Mr. Widdows Golding, Surgeon at Wallingford in Berkshire. A swelling of the Testes has been mentioned by different writers as a symptom of the *Cynanche Parotidea*, or Mumps, as the disease is vulgarly called; and Sauvages, who has described this disease in his *Nosologia Methodica*, as a species of Catarrh, to which he has given the name of Catarrhus Bellinfulanus, from its having prevailed in Bell-Isle in 1757, points out this swelling of the Testes as a characteristic mark by which this disease may be distinguished from other species of catarrh. The writer of the present article in the summer and autumn of 1793 met with several instances, which are here detailed, of swelling of the Testes, attended with pyrexia, unaccompanied by any affection of the glands of the face or throat. The number of cases of this kind that occurred within a limited time, and other circumstances, induced Mr. Golding to consider them as epidemic. The disease was generally ten or twelve days before the part came to its full height of inflammation, and then the complaint gradually subsided, without putting on any appearance of suppuration or tendency to sphacelus.

Art. 6. Case of a Man who castrated himself; by the same. The man, in a fit of religious enthusiasm, made an incision, with a penknife, transversely at the bottom of the scrotum, so that both the testicles came out through the wound. He then divided each spermatic chord about an inch from the body of the testis. A profuse hæmorrhage succeeded, which he attempted to stop by the application of stinging nettles to the part; but this not answering his expectations, he procured a needle and thread, with which he sewed up the external opening. A great quantity of extravasated blood distended the cavity, which was let out, and ligatures applied.—A speedy recovery followed.

Art. 7. Cases and Remarks on the external Application of Charcoal: by Mr. William Simmons, Surgeon to the Manchester Infirmary. Three cases are here related, where charcoal was applied to the stump after amputation, in the form of poultice: half an ounce of the powder being added to enough of the common poultice to cover the end of the stump, and as far as the inflammation extended. From the subjoining remarks it will be seen, that the effect of this substance was merely that of correcting the foetor, without visibly accelerating the cure. It must be observed, that in these cases, besides the common remedies, the patients were all allowed to eat freely of oranges.

‘For the introduction of fixed air into practice,’ Mr. Simmons observes, ‘we are indebted to Dr. Macbride, to whom it was suggested by an observation of Sir John Pringle. It has since been employed in diseases of a putrescent tendency, in calculous cases, and in foul and ill-conditioned ulcers. The carrot poultice, the fermenting cataplasm, and streams of fixed air, extricated from substances containing it, have been used in cases where an ulcer has been foul, or the parts in a state of gangrene. To apply the latter is oftentimes impracticable; the fermenting cataplasm

taplasm, after lying on the part some hours, becomes more offensive than the smell it was intended to cover; and carrots, which are not always to be met with, contain a refinous matter that may in some instances be improper. Charcoal, a substance containing carbonic acid gas,* is free from these objections. In the cases lately published, it has been said to possess the power of cleansing and healing ulcers, as well as correcting the discharge; the present cases warrant no such conclusion, Holt and Allwood were better before it was used, and during the whole time powerful internal means were exhibited. The sloughy state of Allwood's limb, covered by the carbon, led me to attend particularly to that circumstance, and to render that opinion at least doubtful. The case of Nuttall, however, is conclusive. Every means suggested to check the rapid progress of his disorder was ineffectual for some time, and the ulceration extended, although the limb was covered with a thick poultice of the carbon. But what puts it beyond a doubt is the pustulous appearance which came upon and spread on the sound part of the limb covered by it, which was healed in a few days by the *ceratum lapidis calaminaris*.

‘ The change wrought by any substance on dead animal matter, is no proof of its operation on the living fibre. From the above cases it appears that charcoal corrects the fetid smell of the matter issuing from a foul ulcer, but has no power in promoting cicatrization. The cases related in the work above alluded to, are not quite satisfactory; for whilst this substance was employed, remedies generally efficacious were administered, except in two instances which are so shortly reported as to prove nothing.

‘ From its success in foul ulcers I was induced to try it in ulcers attended with caries; and in these it has fully answered my expectations. It never fails to

* Mr. Simmons is incorrect here: charcoal must combine with oxygen, to form carbonic acid.

correct the stench, a circumstance of great comfort to the patient himself and all around him. Besides the unavoidable contamination of the air in apartments where many invalids are put together, the effluvia arising from foul and carious ulcers must have a pernicious effect, by adding to the impurity, and also tending to produce inbred diseases. In some ulcers, where the discharge is not only fetid, but so acrimonious as to excoriate the neighbouring parts, I have found that it obtunds the acrimony: and as an ulcerated is the best absorbing surface, may it not produce a farther benefit, by thus preventing a pernicious substance from being carried into the system?

‘ I am aware that three instances hardly corroborate evidence in favour of any remedy; but having since tried it in a great variety of cases, I relate them as being the first, and which were very particularly attended to. Ample subsequent experience has convinced me that I have fairly appreciated its merits; to detail the many cases in which I have tried it would be unprofitable labour, as their result corresponds with these.

‘ It is hardly necessary to observe that the quantity of powder used should be according to the extent of surface to be covered, and that it should be well washed and dried to free it from salts or other foreign matter.

‘ Changing the poultice once a day is sufficient.

‘ In the army and in military hospitals, where, from the number of surgical patients and other causes, attention to their cases cannot be so regular, as in common practice, I apprehend it will be found a very valuable acquisition.’

Art. 8. Case of Pins extracted from the Breast of a Woman, after remaining there 60 Years: by Mr. Henry Fryer, Surgeon at Stamford, Lincolnshire.

‘ In March last,’ observes Mr. Fryer, ‘ I was desired to attend Mrs. M. The person who came for me informed me, that the patient, a few weeks before, had fallen down stairs upon her face, by which fall
the

she had hurt her breast, and then first acknowledged that she had, many years before, thrust several pins into her breasts. Upon examination I found I could very readily shake about a great number of pins, (which seemed of different sizes, as well as shapes) not only in each breast, but also in the skin upon the scrobiculus cordis.

‘ On farther inquiry I learned, that about sixty years ago, when between fifteen and sixteen years old, she had been in some degree deranged, and had at that time forced these pins into the skin, but had never felt any inconvenience from them till now, when she had fallen down ; and, I suppose, some of the pins being pressed hard against the skin, as they lay between the skin and the ribs, with scarcely any adipose substance intervening, had occasioned the pain. She was perfectly rational at this time, and gave me the above account herself.

‘ As she pointed readily to those pins which gave her pain, I made a small opening with a lancet, and took out three, one crooked, the others straight ; they were turned very black, and I had some difficulty in detaching them. I saw her again in a few days, when the wound was nearly healed, but she complained then of some others ; I therefore made another small opening, and removed two more pins, after which she would not consent to have any more taken away, as she said that she then felt no pain from them.

‘ The number of pins still remaining I can by no means guess at ; but it is so considerable, that I can feel them strike against each other upon taking hold of either of her breasts, particularly as her skin hangs loosely from her, she being now very thin ; and also upon laying my hand upon the skin between her breasts, I can feel them in lumps, lying in every direction.’

Art. 9. Description of a New Key Instrument for the Extraction of Teeth, by Mr. I. SAVIGNY, Surgeon's Instrument Maker in London. The pain and hazard attending the operation of extracting teeth are so generally known, that every attempt to render it more safe and easy is entitled to a grateful reception from the profession and the public at large. The principal defect in the Key Instruments hitherto used, arises in Mr. Savigny's opinion, from the depth of the bolster, which, even in the smallest, describes in its action so large a circle (the stemor shank of the instrument being considered as its centre) as to occasion unavoidable inconvenience; and in the larger or deeper ones certain danger of fracturing the alveolar process, and of being followed by consequences always painful, and frequently dangerous.

The violent effects of so powerful a fulcrum have usually been increased by a curve or neck at the inferior extremity of the instrument, for the purpose of retaining its action in a right line with its handle, when employed in the extraction of the molares in the internal direction; an alteration which, although it effected its intended purpose, still augmented the inconveniences stated, to so great a degree as generally to have produced the consequences mentioned above.

To obviate in some degree these inconveniences, Mr. Savigny has constructed the instrument with a circular bolster, the action of which being confined to a revolution upon its own axis, gives sufficient power for the extraction of the tooth in nearly a perpendicular direction; a regular obtuse surface being thus applied to the gum, the danger of bruising or laceration will be also lessened. Mr. S. advises the alteration in the shank, as recommended by Mr. Clarke, of Sunderland,* to be adopted along with the improvement now suggested.

* See Med. Rev. vol. 2, p. 191.

To form a correct idea of the alteration here recommended, it will perhaps be necessary to see it, or at least the representation in the plate: but we have no doubt of its advantages, and can safely venture to recommend it to our readers.

Art. 10. Some Account of the Effects of the Vapour of Vitriolic Æther in cases of Phthisis Pulmonalis: by Dr. RICHARD PEARSON, Physician to the General Hospital near Birmingham. Dr. Pearson formerly mentioned slightly the good effects of the vapour of Æther in consumption of the Lungs.* In the present paper it is recommended in combination with cicuta. The mode of using this is thus described by the author

‘ I direct the patient to pour one or two tea spoonfuls of pure vitriolic æther (or of vitriolic æther impregnated with cicuta, in the manner hereafter described) into a tea cup or wine glass, and afterwards to hold the same up to the mouth and draw in the vapour that arises from it, with the breath, until all the æther is evaporated. This is repeated three, four, or five times in the course of a day, for a month or six weeks, more or less, according to circumstances.†

* Vide Med. Rev. vol. 2, p. 387.

† The loss of a part of the vapour, which is unavoidable in this mode of applying it, may be prevented, as a medical friend has suggested, by setting the tea cup containing the æther in a small basin, and inverting a funnel over it. By applying the mouth to the tube of the funnel and making an inspiration, the patient draws in all the vapour along with the atmospheric air, which enters at the bottom of the funnel. In winter, the evaporation may be promoted, by setting the tea cup in hot water; in which case the funnel is to be inverted, *not* into the basin containing the water, but over both tea cup and basin, so as to rest immediately upon a table, tray, or plate, having a bit of doubled paper, or a quill, put under it, to allow the external air to enter more freely.

Children and even infants may be made to inhale this vapour, by wetting a handkerchief with æther, and holding it near the nose and mouth. It must be confessed, that this is attended with great waste; but in urgent cases of hooping cough and croup, in which it promises to be of use, this consideration can have little weight.

The

The *first effects* of this application are an agreeable sensation of coolness in the chest, an abatement of the dyspnœa and cough, and after ten minutes or a quarter of an hour, easier expectoration. The *ultimate effects* (provided other proper measures be not neglected, for this is not to supersede the use of other medicines, but to be employed in conjunction with them) are, a removal of the local inflammation, a cleansing and healing of the ulcerated lungs, and a suppression of the hectic fever. To assert that all these beneficial consequences will flow from its application in every species and degree of phthisis pulmonalis, would be adopting the language of quacks, and insulting the understanding of every one experienced in the profession; but to say that some of these good effects are likely to result from its use in most instances, and most of them in a great number of instances, is only asserting what an experience of two years in a situation where the opportunities of making trial of it have been very frequent, has fully confirmed.

‘ The salutary operation of æther applied to the lungs in the form of vapour, I have found to be greatly promoted by several volatile substances that are soluble in it; but by none more so than by cicuta. By macerating a sufficient quantity of the dried leaves of this plant in æther for the space of three or four days, or at most a week, and occasionally shaking them together, a very saturated tincture is obtained, which may be inhaled in the same manner, and in the same doses as the pure æther. My proportions are a scruple, or half a drachm, of the powdered leaves to every ounce of æther. The narcotic particles of the cicuta, conveyed in this manner along with the æther-vapour to the diseased lungs, act as a topical application with the best effect; hence, æther thus impregnated succeeds, in most instances, better than when it is employed alone. The only unpleasant circumstance attending the inhalation

U 2

of

of this æthereal tincture of cicuta, is a slight degree of sickness and giddiness, which, however, soon go off.

‘ It cannot be expected that I should here point out every symptom, or set of symptoms, which indicate or forbid the use of this application. I shall only remark, that it appears to be best suited to the florid, or what is commonly termed the scrophulous consumption. Where the pulmonic affection is complicated with mesenteric obstruction, or diseases of the other viscera, or a dropical condition, it affords but transitory relief; and in the very last stage of the disorder, the proper time for using it is past.

‘ In catarrhs, the æther-vapour without the cicuta, succeeds very well. In these cases it is seldom necessary to continue the inhalation more than three or four days, or a week at farthest.’

Dr. Pearson is preparing, he observes, to lay before the public a report of the cases in which it has been given, accompanied with remarks on some other remedies that may be employed with advantage in the cure of consumptions.

Art. 11. Account of two Cases of uncommon Formation in the Viscera of the Human Body, by Mr. JOHN ABERNETHY, Assistant Surgeon to St. Bartholomew's Hospital. This paper is extracted from the Philosophical Transactions for the year 1793. In the first case, that of a child supposed to be about two months old, the situation of the heart and vessels was completely reversed; the basis of the heart being placed a little to the left of the sternum, whilst its apex extended considerably to the right; and there was a corresponding reversal of its cavities; the vena portarum was formed in the usual manner, but terminated in the inferior cava, nearly on a line with the renal veins. So that the only vessel carrying blood to the liver was the hepatic artery, which was larger than common, The liver was of the

the ordinary size, and the gall-bladder contained the usual quantity of bile. Both the nutrition of the liver, therefore, and the secretion of the bile must have been performed by the hepatic artery.

The peculiarity of the second case consisted in an uncommon formation of the alimentary canal ; there were scarcely any small intestines, these measuring only two feet in length, whilst the extent of the large intestines exceeded four feet.

Art. 12. Description of an Extraordinary Production of Human Generation : by JOHN CLARKE, M. D. Phil. Trans. 1793. In this monstrous production, there was no appearance of head or neck ; of clavicle, scapula, or upper extremities ; of legs or thighs ; or of organs of generation. The only external marks of resemblance it had to a human foetus consisted of its covering, and the attempt at a formation of two feet and a finger. There was not the smallest appearance of vertebræ or ribs. There was neither brain, spinal marrow, nor nerves. It had no heart nor lungs. It contained none of the viscera subservient to digestion, excepting a little portion of small intestines, loosely connected by their mesentery to the posterior edge of the os innominatum : there was no glandular substance whatever.

The mere description of any monster, Dr. Clarke remarks, is of little utility, unless it tends to explain some actions of the animal economy, before imperfectly, or not at all understood. It is on this account, he observes, that very few additions have been made to the stock of our knowledge, from considering those monsters in which there are either supernumerary or confused parts ; because, if we cannot distinctly perceive the use, or necessity of parts, in their natural state, we are not likely to advance in information by the examination of those varieties of structure, where difficulties are only multiplied by the greater complication, or aggravated by the confusion of parts.

The only useful inference in natural history which, he thinks, can be drawn from monsters of the last kind is, that nature can deviate from the usual arrangement of parts, without any material inconvenience; and therefore, that the existence of parts so as to be capable of being applied to the purpose for which they are intended, in the perfect state of the system, rather than any precise order of them, is required for carrying on the functions of an animal body.

Monsters, however, in the structure of which considerable parts are wanting, seem, to him, peculiarly likely to assist us in the prosecution of physiological researches. For if we were never to see an animal except in its perfect state, we could, he observes, form no just idea of the comparative necessity of the different parts; and if we were to attend only to the complete structure which obtains in the more perfect animals, we might be led falsely to conclude, that the usual connexion of parts, which we find in them, is essential to the structure and composition of animal matter. Of these parts, the brain and nerves, the stomach and digestive organs, the heart and lungs, appear to be of such importance, that one might be induced to imagine that the functions of life could not be carried on without them: but in tracing the works of nature downwards, says our author, we shall at length find animals gradually becoming more and more simple in their construction. The brain and nervous system are altogether wanting in some, and there are others which have neither heart nor lungs; yet they continue to exist, and are capable of performing the most important functions of animals: and thus, he adds, the formation of one animal serves to throw light upon the economy of others.

Dr Clarke is aware that this great simplicity of structure is found chiefly in animals, the texture of whose bodies is nearly homogeneous; not consisting, as in more perfect animals, of parts so different from each other, as skin, intestines, &c. are from bone: and

and that it may therefore still be supposed, that all the complicated mechanism, found in the more perfect animals, is essential to the construction of such heterogeneous substances as those of which they consist.

To investigate this matter, he thinks, we must have recourse to those monsters in which there is a deficiency of parts.

There is, he observes, a very material difference between the nature of the life of the more perfect animals, during their foetal existence, and after their birth. In the latter state, the brain and nerves appear to be so essential, that any very considerable defect in them is incompatible with the well-being of the animal; but in the foetal state, considerable deviations from the ordinary arrangement of parts, and such as cannot be endured after birth, are supported without any inconvenience.

In proof of this our author remarks, that the brain has been frequently found very incompletely formed, and sometimes not at all, yet still there have been nerves; and that in other cases, where the brain has been perfect, the spinal marrow has been deficient in a great part of its extent, and sometimes throughout.

Both these circumstances, he thinks, are sufficient to prove, that, at any rate, that intimate connexion of the brain and nervous system, which takes place after birth, is not necessary for the formation of a body in other respects perfect. But still, he adds, it would remain doubtful, whether any regular structure could be formed, without any vestige of either brain or nerves; and therefore without a possibility of their influence, in any manner, toward such structure.

The monster, which is the subject of this paper, is, he observes, so extremely simple, in this respect, that it cannot be exceeded by the most simple animal known.

To those who may be disposed to object that there might be brain, or nervous fibres, in this monster, but that they might, in the dissection, be destroyed, our

author replies, by observing, that the parts were examined too carefully to warrant such a suspicion ; and that as there were no bones representing either the cranium, or spine, or os sacrum, it is not probable that their contents should exist in any other situation.

He is aware that another objection may perhaps be taken from the anastomosis of the vessels of the monster, with those of the perfect fœtus, and that the nervous influence may be supposed to have been transmitted, in this way, along the vessels ; but he contends, there is very good reason for believing that the vessels of the placenta have no nerves ; and that even if they had, it is still very unlikely that, merely by such anastomosis, any nervous influence could be conveyed.

Dr. Clarke has thought it right to answer another objection which may be made, viz. that nervous matter may be co-extended, or co-existent with all other animal matter, and that, of course, it is of no consequence whether there be any sensorium, or reservoir of impressions, &c. or not ; because the stimulus, which produces action, must reside in parts, as well as the other substance of which they are composed : but although this may possibly be true, we have, he contends, no evidence of the fact sufficiently satisfactory to carry conviction along with it. On the contrary, he thinks there is good reason for believing that nervous influence is conveyed from the brain downwards ; and if we are right in this conjecture, which is warranted by the experiment of tying, or cutting nerves, then, he observes, the existence of the nervous fibre, like that of a string of a musical instrument, would be inactive, unless it received an impression, which, with regard to the nerves, should come from the brain.

The whole, then, of the actions of this monster must, he thinks, have been those of the vascular system entirely ; and these, he observes, seem to have been capable of forming bone, skin, cellular substance, ligament, cartilage, intestines, &c.

From

From the defect of heart in this monster, Dr. Clarke argues, that the energy of the arteries was equal to carrying on the circulation, not only in its own body, but also through its own placenta; and from the deficiency of its nerves, that the use of these is probably very small, if any, to the foetus.

He mentions it as an opinion entertained by a very acute physiologist, the late Mr. John Hunter, that in all cases a foetus is a very simple animal, as to its internal actions; and the circumstances attending this monster, he thinks, fully confirm such an idea.

Dr. Clarke observes, that in the formation of a foetus the usual objects of nature seem to be that it should grow, and that it should be fitted with parts which, though of no use to it then, are essential afterwards. We know, says he, that the lungs are of this kind, and it is very likely, he adds, that the brain and nerves are so too. That there is a very material difference between the internal functions of a foetus in the womb, and those of an infant after birth, seems, he thinks, very presumable; not only from our finding that it can carry on life without parts which are of the greatest moment afterwards; but also from its possessing parts which after birth go into decay, or disappear, as the thymus gland, &c.

The common uses of the nervous powers are, to convey impressions from without, and volition from within; but a foetus in the uterus, observes our author, is exposed to no external impressions, and is most probably incapable of volition, since it is not conformable to the general wisdom of nature to give that which, in such a situation, must be useless. He seems, therefore, inclined to think that the formation and growth of a foetal body depend entirely on the actions of its vascular apparatus.

The remainder of the volume must be reserved for our next number.

ART. XXV. *Die Kunst das Menschliche Leben zu Verlängern*: i. e. The Art of Prolonging Human Life. By C. W. HUFELAND. Jena. Octavo, 9s. Imported by BOOSEY, London. 1797.

THE present performance belongs no less to the department of morals, than to that of medicine. The means of preserving and prolonging life, and therefore we may hope, of increasing the sum of human happiness, is an object equally worthy the attention of the philosopher, with the art of relieving its present ills. In studying the art of prolonging life, the principles on which life depends both in man, and in the different classes of organized beings, must form the basis of the inquiry, and cannot fail to suggest hints which every individual may apply with advantage to himself in the course of his existence.

The author divides his subject into two parts. In the first he considers the theoretical, in the second the practical division of the science. In the first lecture he gives a short history, with anecdotes of the chief persons, who, like Cornaro, have by good rules attained to a long life; or, like Cagliostro, Mesmer, Paracelsus, and other quacks, have made pretensions to a knowledge with which they were totally unacquainted. The second lecture inquires into the nature or power of life, which is considered as the finest and most powerful agent in this world; which, like the electrical or magnetical force, gravity, and other powers, has its peculiar mode of action, is destroyed by peculiar circumstances, and is assisted by peculiar substances. The three chief assistants are, light, warmth, and oxygene.

On the subject of life, the author observes generally, that it has often been compared to a flame, and it is indeed similar in operation. Destructive and creative powers are with incredible activity continually

tinually contending within us, and every instant of our existence is a wonderful mixture of annihilation and creation. As long as the living power possesses its original freshness and energy, the creative power is the superior, and in the contest retains a considerable superfluity: the body then grows and proceeds to perfection. In the process, the two powers come to an equilibrium, and consumption is equal to regeneration. At last, from the diminution of the living power, and the wearing of the machine, the consumption gains the ascendancy; and, expenditure, degradation, and total dissolution, are the inevitable consequences. Every creature has three periods,—increase, perfection, and diminution. The length of life depends on the quantity of original living power, the strength of the organs, the quickness or slowness of consumption, the perfection or imperfection of restoration.

In the two next lectures, the author treats of the life of plants and animals. The following ones are dedicated to man; particularly, the effects of mind on body, and of body on mind are explained; and he satisfactorily shews the dependence of long life upon moderation, both in bodily and mental enjoyments.

Throughout the whole of the work, as much attention is paid to the mind as to the body. All idle fears and bad passions are represented as equally injurious, with bad food or poisons. The long-liver must be a moral man, an active, and a good man; and, if we hear of instances of longevity in different characters, we must look for the reason in the original formation and strength of organs, and the counteraction of some immoral practices; and by the constant attention to some circumstances favourable to length of life.

ART. XXVI. S. TH. SOEMMERING. *De Corporis Humani Fabrica.* VOL. III. pages 338. Octavo, 6s. Imported by BOOSEY. 1797.

IN a former number of our Review* we gave a general account of the work before us, and likewise the contents of the first and second volumes, containing Osteology and Syndesmology.

The author commences the third volume with an account of the best writers on Myology or doctrine of the muscles, in the Latin, German, French and English Languages. He then considers the writers on the *Bursæ Mucosæ*, of whom he names but few. Amongst the principal works on the subject, he mentions Monro's description of the *Bursæ Mucosæ*, to which the author gives the preference.

The *Bursæ Mucosæ*, he observes are not only found in the joints, but also in the head, trunk, and in different muscles, which he names.

After enumerating, at some length, the qualities common to all the muscles, he gives the chemical analysis of the muscular fibres of the ox and calf,† as that of the human body has not yet been made. Muscles lose more than one half of their weight in drying.

The following TABLE exhibits the result :

	Unc. Drach. Gr.			Unc. Drach. Gr.		
Four ounces of Ox's flesh distilled in <i>Bal. Mar.</i> gave out				Of Calfs flesh		
Of fluid	2.	6.	36.	2.	6.	54.
Dry residuum	1.	1.	36	1.	1.	28.
	4	0	0	4	0	0
Another portion gave out						
Of watery extract (A)		1.	56.		2.	30.
A fluid transmitted in <i>B. M.</i>	2.	6.	36.	2.	6.	54.
Remaining phlegm		1.	16.			52.
Remaining dry fibres (B)		6.	36.		5.	62.
	4	0	0	4	0	0

* See Med Rev. VOL. II. p. 255.

† This table is taken from FOURCROY, as published in LORENZ CRELL *neues Chemisches Archiv.* Tom. iii. p. 177.

	Unc. Drach. Gr.		Unc. Drach. Gr.	
(A) Exposed to chemical analysis gave out				
Of Sal. Volat.	1.	2. }	1.	12.
Oil and Spirit		38. }		
Carbon		6.	1.	
Left		10.		18.
	<hr/>		<hr/>	
	1.	56.	2.	30.
(B) Gave out				
Of Sal. Volat.	2.			64.
Spirit. Volatil.		36.	1.	37.
Carbon	1.	40.	2.	18.
Left	2.	12.		13.
	<hr/>		<hr/>	
	6.	36.	5.	12.

The laws of irritability are next detailed under the titles of *vis vitalis*, *tonica*, *vis insita*, *vis innata*, *vis musculosa*, *vis musculo propria*, which the author considers as synonymous.

Opium, he observes, applied either to a muscle, or to the nerves, or cerebrum, diminishes at first the *vis viva* or irritability, but, when applied in sufficient quantity, it almost entirely destroys it; so that as long as the opium exerts its power on the muscles, no stimulus, except that excited by the collation of two metals, can bring it into action.

Upon touching a contracted muscle with opium it relaxes. The same thing takes place when opium is given internally; it acting upon the cerebrum, medulla spinalis, nerves or muscles.

Those muscles which have the greatest quantity of the *vis vitalis*, or irritability, more forcibly resist the destroying power of opium: this holds good principally of the heart.

As the heart has the fewest nerves, and as opium acts by the nerves, the reason is readily explained, he observes, why the power of the heart is less affected by opium than the other muscles. But if it had as many nerves as a muscle of equal volume, its living power would be affected in the same degree.

The vapour of sulphur, excessive tension, the nuxvomica, venom of the viper, excessive electricity, excessive

cessive heat, and excessive cold, appear to diminish irritability.

Are therefore, he asks, irritability and the vis nervorum of one and the same kind? The author observes that to excite the vis viva of the muscles, it does not signify whether a muscle or its nerve be irritated: and, likewise, that this power is alike destroyed, whether opium be applied to the muscle or to the nerve.

Opium diminishes the irritability of a muscle in proportion to the number of nerves which go to it.

The heart, from its having few nerves, is very little weakened by injuries to the vis nervorum.

The same causes diminish and increase both irritability and sensibility.

The younger the subject the more sensible.

On compressing, dividing, or destroying a nerve entering a muscle, the muscle is not only immediately relaxed, but gradually wastes, unless the læSION of the nerve be repaired.

The size of the nerves for the most part corresponds with the size of the muscles, excepting those of the heart, and eyes.*

Such are the grounds on which the author endeavours to support the opinion that irritability and sensibility are the same, or nearly so.

The muscles are next considered as to their uses in general,—the division of muscular fibres—the names of muscles, their description, and symmetry, and their peculiarities according to sex.

The tendons and ligaments are briefly surveyed; this is followed by general observations on the bursa mucosa.

The description of the particular muscles succeeds; in which the names and order of Innes are adopted. In this part, as in the Osteology, references are given to the best plates on the subject. The whole is con-

* HALLER *de C. H. fabr* T. ii. p. 398.

cluded with an explanation of the action of the muscles employed in moving the body, under the heads of *status* or standing—*incessus* or walking,—running and jumping.

ART. XXVII. *A Treatise on the Yellow Fever, as it appeared in the Island of Dominica, in the Years 1793, 4, 5, 6 : to which are added, Observations on the Bilious Remittent Fever, on Intermittents, Dysentery, and some other West India Diseases ; also the Chemical Analysis and Medical Properties of the Hot Mineral Waters in the same Island.* By JAMES CLARK, M. D. &c. Octavo, 168 pages, price 3s 6d. MURRAY and HIGHLEY, London. 1797.

THE Yellow Fever has excited so much attention, and given employment to so many pens, that a superficial observer might be led to conclude the subject was pretty nigh exhausted. The dreadful ravages, however, which it has made, and indeed, according to the latest accounts from the western world, which it daily continues to occasion, notwithstanding the means of prevention, and of cure which have been so ably applied, still render it a very interesting object of our regard. That the ablest efforts of art should be yet unavailing to subdue this formidable enemy to human life, is well calculated to mortify the vanity of the physician, and to make him distrust the powers of his art, too feeble, alas ! for the removal of various important ills. These considerations, however, should not discourage exertion ; for though our attainments fall short of perfection, the result of well applied industry must ever be useful knowledge. On these grounds we are gratified with the present treatise, the production of a writer, whose opportunities of studying his subject have been considerable, and whose

whose opinions therefore are entitled to much attention. The value of the author's remarks are not a little heightened from the alledged circumstance, that they were the result of his own observations purely, being a stranger, at the time they were made, to the writings of other practitioners on the same subject.

The fever here treated of made its appearance about the 15th June 1793, a few days after the arrival in the Island of a great number of French Emigrants. They were not sick, however, on their arrival; and the fever had not made its appearance in Martinique when they left it. From the 1st of July to the 1st of October it was computed that eight hundred Emigrants, including their servants and slaves, were cut off by this fever; and about 200 English, including new-comers, sailors, soldiers, and negroes, also fell victims to it in the same space of time. Few new comers escaped an attack, and few of these recovered. It spared neither age nor sex among the Europeans and Emigrants; and not only the people of colour from the other islands, but the new negroes who had been lately imported from the coast of Africa, were all attacked with it. The negroes who had been long in the town, or on the Island, escaped.

The fever became less violent in the month of October; and about the beginning of November it ceased altogether, which was supposed to proceed from the comparative coolness of the weather; but the arrival of some American vessels, about six weeks after, served to shew, that this short respite was more owing to the want of proper subjects for the vitiated atmosphere to act upon, than to the change of its temperature, for in a short time all on board, who had not been in the West Indies before, were seized with it, and many died. This happened in December, 1793, Jan. and Feb, 1794. From this time till the month of July few cases occurred, and most of these recovered. And even in the following autumnal months

months the mortality was not so great as in the former year.

After the 10th Oct. 1794 a fresh introduction of emigrants took place. The fever did not appear amongst these people till the tenth of Nov. and although many of them died, it was by no means so fatal as before, nor did it last more than two months. From the middle of Jan. till July 1795 it disappeared, and in the autumn only a few, from irregularity of living, were attacked : from this time to June 1796, when the author quitted the Island, not a single case of the disease occurred. In the other Islands, the author learnt that the disease followed nearly the same course.

These points, which we have selected from the history of the disease, are of considerable importance ; as they serve to throw light on the remote causes, and thus enable us to adopt preventive means.

The symptoms as here described correspond almost entirely with the accounts of other writers. We may mention, however, that the author considers the following as the most distinguishing, and true characteristic marks of this fatal disease : an extraordinary flushing of the face, redness of the eyes, violent pain in the eye-balls and round the lower part of the forehead, dry skin, a soft full pulse, not much quicker than natural, and the heat, upon touching the body, found not to be so great as the external appearances would lead us to expect.

With respect to the method of treatment adopted by Dr. Clark, the first indication was, to subdue the fever by the most speedy means possible : the second, to prevent the putrescent state that follows so rapidly after the febrile stage, or to oppose its progress when begun, and at the same time to support the strength of the patient. Bleeding was very seldom had recourse to ; only indeed in a few new comers from a

X colder

colder climate. There was not a single instance of an emigrant recovering who had been bled.

Purging was the chief means employed to remove the fever, but the stomach could seldom be brought to retain the common purgatives; and even when they were not vomited up, a triple dose was always necessary to produce sufficient evacuations. The author therefore combined calomel with jalap, and exhibited these in the form of pills: three or four grains of calomel, or more, with twice as much Jalap, were given every four or six hours. The use of these was continued during the whole of the febrile stage, and often for some days after. After the febrile stage, which commonly lasted for 48 hours, when the black vomiting came on, the calomel was continued as an alterative, in doses proportioned to the apparent danger, with or without opium according to the state of the *primæ viæ*. From three to four grains were administered every four or six hours to an adult, and a glass of strong decoction or infusion of red bark with orange peel was ordered every hour and a half in the intervals, together with as much nourishment and wine as the stomach could bear, but always in small quantities. A ptyalism rarely took place, but the gums were sometimes a little affected about the third day, in which case the mercury and every other remedy were suspended, and nourishment and wine only given.

The author was led to the use of calomel in the first stage, on account of the tardy and ineffectual operation of other purgatives. At that period, the necessity of purging seemed to be clearly pointed out, from the evidently violent determination of the circulation to the head. In the second stage, the determination appeared to be equally violent to the liver, which was then the principal seat of the disease. In a few cases, where there was evident enlargement of the liver, and where the incessant vomiting prevented the use of calomel in sufficient quantity, mercurial frictions were had recourse to:
after

after the black vomit made its appearance, little was to be hoped for from any remedy.

The Method of Prevention. New comers were generally attacked in a month or six weeks after their arrival. Officers of the Navy and Army were rarely attacked during the severe fatigues of a campaign, and even when exposed to the violent heat of the sun, but in a few weeks after they were relieved from it, and repose succeeded excessive exertion and anxiety of mind, very few escaped an attack. As a preventative the authors chief dependance was on mercury. A purge of calomel and jalap was first given, and frequently repeated, or a few grains of calomel were given once or twice a day till the gums were affected, and a purgative afterwards; and soon after, this course was renewed without confining the patient, and after this some bark was generally ordered every day for a week or more. Few, he observes, could be prevailed upon to continue the mercurial course long enough, and fewer still to renew it; but such as did were not attacked. New comers, it is said, who can be prevailed upon to undergo one or two gentle courses of mercury, taking a few laxative medicines after, confining themselves to the moderate use of wine, and living chiefly on vegetables and fruits for the first two months, may rely almost to a certainty on escaping this fever.

The next section is devoted to an inquiry into the remote causes of the fever, at Dominica, and in the other islands, and in North America. The author observes that the weather was unusually hot during the months of June and July in the years 1793, 4, and 5. It was exceedingly calm, and there was very little thunder. He has observed, for many years, that when there were much thunder, and very heavy rains in the months of June and July, that they always escaped a hurricane, or a severe gale of wind. On the contrary, if there was fine weather in these months,

they had either a hurricane, or a very sickly season after. If that severe scourge of the inhabitants of the West Indies took place, by which the whole country was laid waste, and desolation was every where to be seen, the inhabitants had better health than is usual at that time of the year, to compensate them for their great losses and calamities.

By the excessive and long-continued heat of the sun the state of the atmosphere appears to be so much vitiated in all warm climates, that if some agent or means were not employed from time to time by nature to rectify it, these countries would become unfit for the residence of human beings. Thunder, heavy rains, and violent gales of wind seem to be the agents for this purpose. The want of these, left the air in a state incompatible with health, which the author considers, therefore, as the remote cause of this fever.

He endeavoured to ascertain the purity of the air by Mr. Scheele's simple apparatus: viz. by filling, at different times, gallipots with liver of sulphur, and also with iron filings and flower of sulphur well mixed and moistened, and putting these upon a stand under a glass vessel, which was placed on a stool in a pail of water. The glass vessel was marked and divided on the outside, and allowance being made for the space which the gallipot occupied, the water rose only one fifth in the glass vessel, after standing 24 hours. When the disease abated, it rose near one fourth; and upon many trials afterwards, when the place became more healthy, the water never rose above one fourth, which makes about 25 parts of vital air that was taken up. When the Emigrants fled towards the mountains, where the air is very pure, they always avoided an attack of fever, or soon recovered if in a convalescent state.

Upon these facts, then, the author builds the following theory respecting the origin of the Yellow Fever.

This

* This derangement of the component parts of the atmosphere, was probably effected by the strong light and intense heat of the sun having disengaged, or formed some combination with its vital part, or a certain portion of it, which being so united and rarified, would rise far above that stratum of air, in which we, in lower situations, breathe, leaving the mephitic or heavier part near to the surface of the earth. The loss of a small portion of vital air, would render this lower stratum very unfit for respiration, and of course very unwholesome to live in.—The atmosphere of this town became probably vitiated in this manner by degrees, and therefore did not affect the health of the inhabitants either suddenly, or very considerably. The common remittent fever, dysentery, and other bilious complaints, had, however, begun to show themselves, previous to the appearance of the Yellow Fever.

‘ The air already thus deranged, was, by the sudden arrival of a number of persons greatly exhausted, and unprovided with changes of cloathing, and also crowded together in an extraordinary manner, so contaminated with mephitic exhalations, and exalted to such a pitch of malignancy, that all who had been accustomed to breathe a purer air, viz. the Europeans, Americans, those from high situations in the mountains, as well as the emigrants, who, as mentioned before, were predisposed by a multiplicity of causes, would all be readily and greatly affected by it. If the constitution is able to resist the first attacks of the common bilious remittent fever, occasioned by residing in the neighbourhood of marshy places, experience has shown us that by habit the baneful influence of these mephitic vapours will be entirely overcome, and that such persons having escaped some attacks of this kind, may continue to live in such an atmosphere, and enjoy as good health, as people in general do, in West India towns. But the animal œconomy is not only influenced by habit in all its parts, but it has also a power of conformity to almost

X 3

any

any change, either of increase or decrease of nourishment, or of labour, as well as of rest, confinement, want of sleep, &c. &c. as it has also of breathing a foul unwholesome air with little apparent injury to health, provided any or all of these variations or states of life, are brought about gradually. The direction of our ideas, and the powers of thinking and acting, are in all cases influenced by custom. For these reasons, probably, new-comers are speedily attacked with this fever after their arrival, even in places where it does not prevail, and this gives it so much the appearance of an infectious disease, where it has already broke out.

‘ A deranged state of the atmosphere, as mentioned before, seemed to me to be the first cause that excited this mortal disease in our island ; and as it prevailed in the different towns of the other islands, the more they were crowded with strangers, I am inclined to believe, that it proceeded from the same cause in them all, aided, and perhaps put in action, by the great concourse of people in towns exposed to so much heat. New-comers from Europe, in high health, were soonest affected by this impure air ; others, who had resided some time in unwholesome places in America, and in the French islands, resisted its baleful influence much longer ; and perhaps, by the extraordinary or immoderate accumulation of it in some West India and American towns, even the old inhabitants were sometimes affected with this fever. In this way, many fevers of the typhus kind may become more or less epidemic, which are not in themselves contagious, as is always the case in the jail and ship fevers. I believe the air did never arrive at that contagious degree of accumulated impurity in this island : For when patients labouring under this fever, were removed to high situations for the sake of breathing a cooler and purer air, and who, notwithstanding, fell victims to it, the people about them were never infected, nor did the disease ever prevail

prevail afterwards in such places.—And I have been assured that this was exactly the case in America. There appears to have been such an extensive and very peculiar deranged state of the atmosphere in the towns in these islands, and in North America, that it is more probable, this disease was produced by this general cause, breaking out nearly at the same time in different places, than that it originated only in one or two towns, and was carried from thence by infection to others, by either persons or goods, as has been supposed. The regular return, and continuance, of this fever in the months of July, August, and September, every year, more or less, since its first appearance in these islands, and in the towns in America, seems to me to argue strongly in favour of this opinion. From these facts and observations I am of opinion, that in all hot climates, where a great depravity of the atmosphere is produced by the causes already mentioned, and where its natural purifiers are wanting, this fever will break out in such places, on the arrival of a great number of strangers, more especially if they come from a cold country. If such impure air is allowed to be the remote cause of this fever, as appears from what has been said; the air in respiration, in this case, not having a sufficient quantity of oxygen, may occasion a deranged state of the fluids, which I conceive to be the immediate stimulus or excitement, or what may be termed the proximate cause of this fever. And if the biliary secretion be intended for the discharge of the degenerated lymph and crassamentum of the blood, as Dr. Maclurg thinks, in his dissertation on the bile, the great redundancy and degeneracy of the bile in this fever may be easily accounted for on that principle. This derangement may be the cause of an increased determination of the fluids to the liver, and as the morbid animal process gains ground, which it does every hour, if not opposed by powerful remedies, the liver becomes more and more distended with blood, and

the biliary secretion is increased and hurried on in such a rapid manner through the extremities of the pori biliarii, that it resembles grounds of coffee rather than bile, which, upon a narrow inspection with a magnifying glass, seemed to be black dissolved blood, floating in lymph or mucus. When the blood, dissolved by this morbid process, meets with any obstruction, it gushes from the nose and mouth in almost a colourless state, and in such prodigious quantities, that the patient soon sinks into a state of total dissolution.'

A hurricane, the author thinks is the only agent now sufficiently powerful to effect the purpose of dissipating the impure air in their towns, and thereby of removing, for a term of years, this dreadful scourge.

This finishes the subject of the Yellow Fever. Dr. Clark, in the next place, treats of the Bilious Remittent Fever. This is to be distinguished from the former, by its uniform and regular disposition to remit. Neither the redness of the eyes, nor the flushing of the face are so remarkable as in the Yellow Fever, and they always disappear during the remissions. The respiration is laborious during the paroxysm, and the pulse always quick and hard, which is never the case in the Yellow Fever. A constant vomiting of bile accompanies every paroxysm of this fever. And farther, a remission, or evident abatement of the febrile symptoms, takes place always in the course of twelve hours after the first attack.

The chief part of the cure consists in first purging with jalap and calomel, and then giving the bark in large and frequent doses. In general, the author observes, very few died who were treated in this manner. We have not thought it necessary to enter into a minute detail of the treatment, as it differs not materially from that of other writers.

Intermittents,

Intermittents, Typhus, and Dysentery are next spoken of, but we observe nothing particularly new. In Dysentery the author recommends the infusion of ipecacuanha as an emetic and purgative, followed by opium; and these not succeeding, mercurials are advised, as of great efficacy.

The Dry Belly-ach, the author has no doubt, is the same disease as the Colica Pictonum, and proceeding from the same cause; a solution of lead in the new rum. Calomel is the principal remedy recommended. We have, likewise, some observations on Cholera Morbus.

Of the Tetanus, or Locked Jaw. This disease, in the author's opinion, ought to be divided into two species, the Idiopathic and Symptomatic, as the former often admits of a cure, whereas the latter, proceeding from a lesion of nerves or tendons, has, according to his experience, and that of all his medical friends in the West Indies, resisted every remedy hitherto tried, having always proved fatal. Mercurials, wine, opiates, and bark, sometimes succeeded in the idiopathic species. The cold bath never answered, though frequently tried.

Being unable to cure the symptomatic Tetanus, Dr. Clark endeavoured to prevent it; and for this purpose, after wounds or punctures, gave 2 or 3 grs. of calomel twice a day, till a gentle salivation came on, and the same after operations. Out of 15 patients, after amputation, that were treated in this way, only one died, and he was in so irritable a state before, that the consequences were dreaded. In those who had been wounded or punctured, the success was greater; two only having been lost, out of a great number, since this mode of practice was begun.

The *Trismus Nascentium* is a most fatal disease, no instance of a cure having occurred. The finding out the cause, therefore, was a desideratum of vast importance;

importance; for by this only could prevention be hoped for. That the author has succeeded in making this discovery is rendered exceedingly probable, from the following remarks.

‘ The cause was supposed to be, he says, meconium in the bowels, or thought to proceed from the bad instruments that the negro midwives used in cutting the navel-string. The infants were purged with castor-oil or magnesia, to remove the meconium as soon as possible: the midwives were furnished with sharp scissars or razors, and shewn the proper method of cutting and tying the navel-string. But all this did not answer my expectations. I observed that the children born in large negro-huts generally recovered; and that white children, or those of free people, who had their kitchens apart from their dwelling-houses, escaped the jaw fall; I therefore suspected that the smoke from burning wood, was the cause of it. In consequence of this I gave orders that no fires should be allowed in the negro-houses where the lying-in women were; which answered the purpose of preventing the disease, when this order was complied with; but negroes are so fond of fire that they often lighted it up by stealth, and thereby frustrated my plan. I then recommended a lying-in hospital to be built on every estate, near the negro-houses, with a planked floor, so that no fire could be kept in it; since which no children, who were born in these hospitals, and remained with their mothers in them for nine days, have ever been attacked with this disease. I wish to recommend such hospitals on every plantation in all the islands. The Negro women, however, often elude the hospital, by concealing their pains till they cannot be moved from their own houses; this proceeds from a love of home, or from jealousy of their husbands; but by perseverance, and carrying them to the hospital after they are delivered, all this may be overcome.

It

‘ It is remarkable, that infants are never attacked with it after the ninth day of their age, as was observed before.

‘ The fires in the West Indies are made of wood, and the smoke from them is so stimulating to the eyes, that few white people can bear it for a moment. From the foregoing observations I am of opinion, that the smoke of wood used as fuel in small huts where it has not a proper vent, is the cause of this disease among infants in some parts of Switzerland and France, and in the Highlands of Scotland, as well as it is in the West Indies.

Chemical Analysis and medical properties of the hot mineral waters in the island of Dominica. It appears from the experiments here related, that these waters are strongly impregnated with alum, with excess of a fine white clay; pure hepatic gas; and vitriolated iron. The virtues attributed to them, are very similar to those which other waters of nearly the same constituent properties in different parts of the world are supposed to possess.

By way of appendix we have an account of experiments made on the *Cinchona Brachycarpa*; by Mr. Brande, Apothecary to the Queen. A Table is added, made up chiefly from the experiments of Mr. Babington on the Yellow Bark, shewing the quantities of extractive matters afforded by the different species of the *Cinchona*. We have already spoken of the medical properties of this new species.* The slight chemical differences in the various species of this drug, appear to us very unimportant in a medical point of view.

* Vide Méd. Rev. vol. 2, p. 379.

ART. XXIX. *Medical Extracts.* Vol. IV. Octavo, about 300 pages, price 7s. JOHNSON, London. 1797.

OF the general character of this work we have already given our opinion*. The present volume completes the author's design. In it he considers the progress of the mind, and its vast power of improvement, which conducts to the principles of moral philosophy. He next contemplates the effect of great mental excitement; and lastly, its operation when in an under proportion. The work is copiously interspersed with religious reflections and moral precepts. Religion, he observes, in his Dedication, seems so naturally to flow from the study of medicine, that among the ancients, Galen wrote on the uses of the parts in the Human Body as a hymn to the Creator. In the supplement to Hoffman we find a regular confession of Faith; and the illustrious Baron Haller has left behind him several valuable Dissertations, with some poems on religious subjects. The *Religio Medici* of Dr. Brown acquired and maintains the highest reputation; and the Medical works of the late Dr. Gregory abound with pious reflections.—Sanctioned by such high authorities, the author hopes his efforts to the same end may stand excused.

The following is the plan of the fourth volume. The author first treats in a general way of the Brain and Nervous System, and of the laws by which they influence the animal œconomy.

Law 1. A due excitement of the Nerves is necessary for the maintenance of vigour of both body and mind. This is illustrated by reflections on the pleasures of the poor man, and on those of a cultivated mind: on Education: on the Studies of Demosthenes: Cicero's account of his own Studies: of Ambition: the Discoveries of Sir Isaac Newton: on Liberty: on Patriotism: on Sympathy: of Self-love and

* Vide Med. Rev. vol. II. p. 524.

Social Affections : of Pride and the Love of Praise :
of the Passions in general : of Anger : of Pleasure :
of Fortitude : on Government : on Cheerfulness.

Law 2. A too great excitement of the mind enfeebles the powers of the Understanding and weakens the Body. Under this head the differences between temporary, and permanent exhaustion are pointed out and explained.

Law 3. A defective excitement of the mind accumulates Nervous energy, while it at the same time weakens the Nerves. This gives occasion for reflections on Grief, Surprise, Absence, Pretended Anger, Restraint, Captivity, Antithesis : Opposition of Light and Shade : Opposition of Character : Discord : Absence from Home : Disappointment : Loss : Hunting, War, and Gaming : Licentiousness : of Silent Grief : of Habit. Several practical observations are interspersed.

Dr. Thornton, well known to our readers by his labours in Pneumatic Medicine, avows himself the author of *Medical Extracts* : a work which, both in design and execution, is calculated to do him honour, as we trust it will be beneficial to society at large. If it is at all objectionable, it is, in having, somewhat too precipitately, adopted theories, which experience and observation have not yet sufficiently confirmed.

ART. XXX. *A Collection of Engravings, designed to facilitate the Study of Midwifery, Explained and Illustrated.* By JAMES HAMILTON, Jun. M. D. Fellow of the Royal College of Physicians at Edinburgh. Octavo, price 6s. ROBINSONS, London. 1796.

THE number of plates in the present work amounts to eighteen, five of which are from preparations in the possession of the author : the remaining

maining ones are copied from Smellie, Hunter, and Boehmer. Some years ago Dr. Hamilton, the father of the present author, published a volume of Tables in octavo, reduced from the large plates of Smellie, The execution of these, however, was exceedingly coarse: “ within these few years,” the author observes, “ a taste for a certain degree of neatness in the execution of Engravings, which this edition of Smellie’s plates do not gratify, has prevailed so much, that their sale is almost entirely stopt.” To supply this deficiency. the present work was undertaken. The utility, however, with a view to practice, of Engravings, of any kind, but especially of those of reduced dimensions, has probably been much over-rated.

ART. XXXI. *Bibliotheca Medica, continens Scripta medicorum omnis ævi, ordine methodico disposita*, C. G. Küchnii. Volumen I. Octavo, pages 314 Lipsiæ, 1795.

TO facilitate the study of medicine, and to diffuse more generally the knowledge of medical writers, Professor Kuhn has given a list of the different works, their editions, versions, &c. on all the branches subservient to medicine.

The plan on which he has conducted this work is recommended to us by great authorities, and he has followed the labours of those who have thrown the most considerable light on the medical art. BLUMENBACH and METZGER have given the elements of the *Historia Literaria Medica*. PROFESSOR MURRAY has pointed out those medical books most deserving of notice; but many inconveniences present themselves in referring to their writings, from being either too prolix, or deficient in particular parts. The special consideration and separate divisions of Science have been ably handled by HALLER, in his *Bibliotheca Anatomica*,

mica, Botanica, Chirurgica, and Medicinæ Practicæ. BALDINGER, DANIEL, GIRTANNER, GMELIN, HEBENSTREIT, HENZE, JUNCKER, BADER and WEBER, have laboured in the same field. They have accurately enumerated the best writers, and their different productions; but these works are not at all times to be obtained, and are inaccessible to the generality of readers. The author of the present undertaking with due respect to the labours of the above, submits his work to the attention of the medical profession, as a manual of the best writers on the different branches of medicine and medical philosophy.

The different editions, versions, &c. appear to us to be collated with great care, and are presented in a clear point of view. It will doubtless, when completed, be a work of considerable utility.

ART. XXVIII. *A short Address to the Professors of Surgery throughout his Majesty's Dominions, on the Bill lately brought into Parliament for erecting the Corporation of Surgeons in London into a College.* By a MEMBER OF THE CORPORATION. Octavo, 29 pages, price 1s. SEWELL, London. 1797.

THE contests of particular classes of men are usually carried on with no small degree of warmth, and sometimes with rancour, and generally tend to the prejudice of the whole body. But however at these times the little passions of individuals are called into play, and their struggles for power and distinction display themselves, it is more than an even chance, that the public at large are gainers by such disputes: monopolies and exclusive privileges stand a fair chance of being thus exposed, and their effects on the community pointed out; prejudices are removed; public opinion is appealed to; and that line of conduct pursued, especially by the unprivileged party, which is most

most consonant to liberality, and common sense, and therefore, we may hope, to the general interests of society. It is for these reasons that we can view with little concern the late disputes between the Court of Assistants of the Surgeons Company, and the Members at large; not doubting that the result will be in favour of the public, although pride may possibly be humbled, and power be delegated to other hands.

On the present occasion we shall confine ourselves, to giving a general statement of circumstances, with the leading arguments which each party has employed in support of its measures.

It appears that eleven members of the Court of Assistants presented a petition to the House of Commons, for leave to bring in a Bill, entitled, " A Bill for erecting the Corporation of Surgeons of London into a College; and for continuing and confirming to such College certain rights, privileges, and immunities." The management and controul of the affairs of the College were to be vested in ten censors and eleven counsellors, including a president and two vice-presidents. The eleven petitioning members, with ten others of the Court of Assistants, and who were named in the Bill, were to constitute the censors and counsellors above mentioned. These were to hold their situation for life, and were to have the exclusive right of electing to vacancies in their own body; they were to possess a power of making bye-laws and regulations for the professional government and direction of the body at large, who were bound to obey. The lands, tenements, stocks, and revenues of the Corporation were to be vested in them. Their jurisdiction was to be extended from seven to ten miles round London; and the fine for practising within these limits without having obtained the Grand Diploma, which costs near 30*l.* was to be increased from five to ten pounds.

The Petition for the Bill purported to be the petition of the Corporation of Surgeons, although not more than twenty-one of five hundred existing members

bers of that Corporation, were consulted on its expediency or contents ; not the least notification was given to any part of the commonalty that such a measure was in contemplation, or such a Bill solicited ; and it had actually passed through the House of Commons, and been twice read, committed, and reported in the House of Lords, before its existence was known to the Corporation at large.

On hearing of this, some Gentlemen of the greatest respectability convened the members at large by public advertisement, when 178 met or signed a petition to the House of Lords against the Bill. It was recommended, the petitioners were heard by their Counsel, and at length the Bill was thrown out.

The pamphlet we have now before us, contains a vindication of the proceedings of the Court of Assistants, and endeavours to prove the expediency and propriety of the Bill in question. It observes, and justly, that, for the most part, the Bill intended only to transfer the rights and privileges now vested in the Court of Assistants, to the censors and counsellors, who were to have the control and management of the affairs of the College, nearly as the Court of Assistants now have. But it is said, in reply, that it is unwise to diminish the chances of professional promotion at a time when all the sources of science are multiplied and expanded in every direction. The changing the titles of the Master, Wardens, and Court of Assistants, which are mere municipal distinctions, into others, importing collegiate rank, and to which no eminence of skill, diligence, or talents, can elevate the members of the corporation at large, must not only check and destroy that emulation upon which perfection in all science in a great measure depends, but exposes the members to disgraceful comparisons, dishonourable and derogatory to the feelings of any body of learned and enlightened men.

The writer of the address takes some pains to do away the idea, that the counsellors were not only to

hold their places for life, but that their office was to be hereditary, and to descend to their sons; *affecting* to suppose that the petitioners erroneously believed this to make a part of the Bill. Without, however, entertaining this ridiculous idea, they naturally enough fear, that consanguinity and patronage may predominate over the public good, and that the sons or relatives of those counsellors, or their apprentices, will be preferred, to the neglect of older and wiser men—to the neglect of men of eminent literary character—or of men who may probably have sustained all the ravages of climate, and all the dangers of war, in the service of their country, as army or navy surgeons.

The author of the address observes, respecting the proposed reduction, by the new Bill, of officers from twenty-four to twenty-one, that the business of all Corporations is best conducted, where there are the fewest managers, provided there are a sufficient number of them to form the respective courts: and with regard to the sale of the Company's Hall, which the Court of Assistants thought proper to effect, without once consulting the members at large, he observes, that if any doubts existed of the propriety of the measure, those doubts could no where be more sedately considered, and every circumstance be more impassionately weighed and deliberated on, than in a Court of Assistants formed by men of unblemished honour and integrity: the public opinions, it is said, delivered in common halls are well known to be generally productive of passionate declamation, and give rise to jealousies and inveterate enmities. The wits of the time would amuse the public with sarcastic remarks on their proceedings, and perhaps the profession become degraded by the engendered passions of the professors.—“ Therefore, let us, as long as possible, avoid convening public meetings, and be satisfied that whatever is done by our Governors in a corporate capacity,

city, is done for the honour of the profession at large, and for the general good of mankind."

To these arguments, it is sufficient to reply by asking, has the Corporation on its present principles, and according to its present establishment, promoted the art over which it was appointed to preside, and answered the intention of its foundation? If so, its principles are good and ought to be perpetuated; if the contrary appears to have been the case, regulation was undoubtedly necessary, and a departure from principles which had been found by experience not calculated to produce the intended effect.

In the year 1790, an inquiry into the affairs of the Company was made by Mr. Gunning, the then Master, and now one of the chosen few. His observations were entered on the records of the Company, and no better evidence need be adduced respecting the management of it. From these it appears, that gross mal-administration did then, and had for some time previous thereto, prevailed in the affairs of the Corporation: that large and unnecessary sums were expended on dinners for the Court of Assistants: that the Court had raised their own former fees, and added others thereto: that their accounts were not duly audited: that their library was without books, and their theatres without lectures: that they had instituted lectures neither in Surgery nor Anatomy of any importance, although certain legacies or bequests had been professedly appropriated for that purpose: that they had held out no reward to rising merit: and that the futile attempts which they had made towards the promotion of these sciences, although found in the end to be totally inadequate and ineffectual, had yet been highly expensive.

It appears also, from the Company's books, to which the petitioners, by order of the Lords, had access, that they had received, since the Act of the 18th of George II. which separated the Surgeons from the Barbers Company, upwards of £.80,000
by

by fees, quarterages, and other means, although during the whole of that time, they have taken no material step for the advancement of the science of Surgery. That the examiners have, during the same period, received, for their own private use, upwards of £16,000, although they state in their petition for the Bill, that they have examined all persons offering themselves as Candidates for Surgeons or Surgeon's Mates in his Majesty's service, and that of the East India Company, without any recompense whatever.

Few, if any, of the abuses complained of have been remedied, or attempted to be so. With these glaring facts in view, therefore, it is impossible not to wish for alterations, that may recal the institution to its intended purposes; the advancement of Surgical Science, and the general interests of the community. The petitioners against the Bill consider, that these purposes are only likely to be answered, by admitting the Members at large to some participation in the Company's concerns; by depositing in their hands some right of franchise, and a voice in the enacting of laws by which they are to be bound. By this means, emulation will be excited, and the hope, prospect, or possibility, of arriving at professional honours and distinctions, be laid open to the profession at large, and not confined exclusively, as hitherto, to a few individuals nominated by their predecessors, as interest or connexion may incline.

Since the rejection of the Bill, overtures have been made to the Court of Assistants, proposing a mutual discussion of the points in dispute, and they have, at length, been attended to. It is much to be wished, that a conciliatory spirit may operate on both sides, and that the result may be satisfactory to all parties. The interests of the profession at large, and that of the whole community, may thus be equally consulted and advanced.

THE
MEDICAL and CHIRURGICAL
REVIEW.

DECEMBER, 1797.

ART. XXXIII. *Medical Facts and Observations.*
Vol. VII.

(Continued from page 273.)

ART. 13. **O**N the Conversion of Animal Muscle into a Substance, much resembling *Spermaceti*. By George Smith Gibbes, B. A. (Extracted from the *Philosophical Transactions* for 1793.)*

ART. 14. *Experiments on the Nerves, particularly on their reproduction; and on the Spinal Marrow of living Animals.* By William Cruikshank, Esq. (From the same.)†

ART. 15. *An Experimental Inquiry concerning the reproduction of the Nerves.* By John Haighton, M. D. (From the same.)‡

ART. 16. *Description of a human Male Monster, with remarks.* By Alexander Monro, M. D. (Extracted from the *Transactions of the Royal Society, Edinburgh.*)||

Of each of the articles above we have already given a full account, to which, therefore, we refer.

* Vide Med. Rev. Vol. III. p. 154. † Ibid. Vol. II. p. 275.
‡ Ibid. 332. || Ibid. p. 379.

ART. 17. *Description of an instrument for performing the operation of Trepanning the skull, with more ease, safety, and expedition, than with those now in general use. By Samuel Croker King, Esq. (From the Transactions of the Royal Irish Academy, Vol. IV.)*

The great labour attending the use of the Trepine, and the hazard which accompanies the use of the trepan are well known to surgeons. Considering this, and the difference of opinion which has existed amongst practitioners in the preference given to one or other of these instruments, we shall be led to think, that if an instrument could be devised, in which might be united the expeditious and equal working of the trepan, with the safety of the trephine, a valuable addition would thereby be made to the manual part of surgery.

The instrument here recommended is composed of a crown or saw made in the usual form, which about an inch and a half from the crown, is fixed to a spindle four inches and a half long, which is received into a barrel or canula of four inches in length; to the top of the spindle, which is square above the canula, is applied a handle or winch, with a nut screwed on the spindle to keep the handle on; at the lower part of the canula or barrel is a flat rim, projecting about a quarter of an inch, on which the left hand, which grasps the canula, rests, to prevent it from slipping down on the part of the instrument below it, which is turned by the handle above; the crown has a centre-pin, as in the other instruments, with a key to remove it when the fulcus is deep enough to admit it to be taken away. Though with this the operation may with great ease and safety be entirely completed, yet to accommodate those who wish to finish with the trephine, the upper part of the barrel or canula is made square to fit into a wooden handle; upon applying this handle, instead of the winch, the instrument is converted into a trephine; in this wooden
handle

handle is a square opening, fitted to the square part of the spindle, and fastened to the same nut.

ART. 18. *Case of enlarged Spleen.* By George Burrowes, M. D. (*From the same.*) Although the size of this viscus was enormously increased, it measuring $14\frac{1}{2}$ inches in length, and weighing 11 pounds 13 ounces, it did not seem to excite any disease or inconvenience, but what might be attributed to the pressure on surrounding parts.

ART. 19. *An estimate of the excess of the heat and cold of the American atmosphere beyond the European, in the same parallel of latitude: to which are added, some thoughts on the causes of this excess.* By Edward Aug. Holyoke, M. D. (*From the Memoirs of the American Academy of Arts and Sciences, Vol. 2.*) Almost from the first discovery of North America, it has been observed, that the extremes of heat and cold are much greater on that side the Atlantic Ocean than they are in Europe, under the same parallel of latitude. But the quantity of this difference has not hitherto been determined with any degree of exactness. The author formed a table of the greatest heat and greatest cold, and of the mean of the greatest heat and cold, for a course of years, of twenty different cities of Europe in different latitudes, and with this compared the heat and cold at Salem in Massachusetts. He found, that the air of America, in this latitude, is hotter in summer, (when hottest) by ten degrees of Fahrenheit's scale, and colder in winter (when coldest) by five degrees, than the whole middle region of Europe taken collectively, whose mean latitude is about 49° or 50° . Again, the air in America is hotter in summer by upwards of 8 degrees, and colder in winter by 28 degrees, than those parts of Europe, which lie nearly in the same latitude.

With regard to the causes of this difference, the author observes, that the evaporation on the surface of the earth is greater in America, than in Europe; that

the quantity of rain is much greater ; and that there are much fewer cloudy or foggy days. It is, he thinks, matter of general observation, that the most intense cold happens in the purest, dryest, and most dephlogisticated state of the atmosphere. In summer, likewise, at the time of the greatest heat, the air is in a similar state of dryness and purity. Dephlogistication, he supposes, to produce cold, by its *chemical* effect in the air ; but that it produces heat only *mechanically*, by inducing a more perfectly pellucid state of the atmosphere, whereby fewer of the sun's rays are intercepted, and, (as the dephlogisticated air is specifically heavier by much than common atmospheric air) by occasioning a greater weight and density of the air near the earth's surface, whereby the sun's influence in producing heat is greatly increased. These considerations may serve to shew, why cold is so much more increased by a dephlogisticated state of the atmosphere than heat. And it is observable, that the difference between two thermometers, one of which is exposed to the sun's direct rays, and the other in the shade, is always *cæteris paribus*, much greater in a dephlogisticated, than in a phlogisticated state of the atmosphere. These causes, Dr. Okely thinks, have a principal share in producing the excess of heat and cold in America, although he admits that the other causes which have been assigned, have likewise produced some effect.

ART. 20. *An Account of an uncommon Case of Emphysema ; and of an external Abscess, the contents of which were discharged by coughing. (By the same)* The Emphysema in this instance occurred in a child about 12 months old, after having been affected with peripneumony for ten days. The tumour appeared suddenly during a violent fit of coughing, on one side of the neck, near the right mastoid muscle, and rapidly spread to a considerable extent. The child died, but no dissection was permitted. To account for this, the author supposes a communication
to

to have taken place somewhere between the cavity of the lungs and the cellular membrane ; and as the first appearance of Emphysema took place in the neck, upon a violent fit of coughing, it seems highly probable that this communication was formed by a rupture of the membranes of the aspera arteria, somewhere between its cartilages * ; and thus gave passage to the air from the lungs into the adjacent cellular membrane, at every expiration ; and as the cough was very violent, the air would, at every such effort, more especially, be forcibly impelled through this opening, and thus extend itself wherever this membrane extended ; at first indeed more rapidly, but still continue to extend, till the resistance which the air met with, in passing out at the opening, was equal to the force by which it was expelled from the trachea in expiration or in coughing. An account of another, somewhat similar, case is added.

ART. 21. *Account of a Case of locked jaw.* By Aaron Dexter, M. D. (*From the same.*) This affection arose from a wound of the foot, occasioned by treading on a nail. The symptoms came on thirteen days after the accident : the wound was apparently well on the third. The subject of the case was Dr. Edward Wyer, a physician ; and its relation, though it terminated fatally, is highly interesting, from the very accurate way in which the symptoms and treatment are narrated. On examining his foot, Wednesday the 10th, (three days after the first slight appearance of the symptoms), nothing was perceived but a very slight speck where the nail entered. There was no soreness, tenderness, or pain in that part, more than in any other. It was agreed to apply the cold bath immediately. He placed himself on a low stool, naked ; and two buckets of cold water were thrown on his

* Possibly a small abscess might be formed between these membranes, and so, by weakening them, occasion their bursting, upon a violent exertion in coughing.

head: after which he placed himself between two blankets on his bed. An agreeable warmth soon took place; and he expressed relief from the application, particularly at his stomach; and could swallow better.

The first application was about one o'clock in the afternoon; and it was repeated exactly in the same manner, four times.

At six o'clock he was evidently relieved. After the fourth bath, he rose from the stool, with great satisfaction; could speak with ease; and drink without difficulty. During the five hours, he took liberally of broth and gruel. The fifth bath had a very different effect: it produced a tremor, and great anxiety. Spasms attacked him more violently than ever, particularly on the back of his neck; which was embrocated with oil of cloves, diluted with spirits of wine. The spasms were very violent also in the muscles of his jaws. To prevent his mouth closing completely, which he apprehended, he had introduced a stick between his teeth; and this was of great importance to him, during his life. At this time his foot was examined, and the speck taken out; which did not show any trace of the nail under the scarf skin. A blister, as strong as could be made, was applied to the part: but he was utterly averse to having the tendon examined; conceiving it too late to make any application to the part originally affected, as the disease had become general.

He wished to have the system supported with wine, bark, and nourishment.

The bath of cold water was tried again, at eight o'clock; but it evidently increased his disorder; and from that time, he would never consent to its application.

During the night, several enemata were administered, of a strong decoction of red bark and snake root. At his usual bed time, an anodyne of two grains of opium was given him: he passed a very restless night.

He

He soon found, that cold drinks produced less spasms than warm ; which led him to take every thing that he was able to swallow, cold.

Thursday the 11th, it was proposed to him, to pass a seton, covered with cantharides, under the skin of the affected part. To this he consented, with a design to inflame the part: but it produced no good effects ; it seemed rather to increase the irritability. In the course of the day, three enemata were administered of a decoction of bark, as before.

He had a great aversion to bark in any form, received into his stomach ; as it generally, in health produced nausea. The object of this application was to give tone to the stomach ; from a presumption that debility was the immediate effect of the disease.

The gentlemen of the medical profession, who were present, suggested to him the use of the warm bath, as every other application had proved of little effect: to this he consented. About four o'clock, in the afternoon, he was placed in a bathing machine, with water heated to 90° of Fahrenheit's thermometer, in which he remained seventeen minutes. It produced a good effect, in relaxing the muscles in general, particularly of his body and arms. Growing faint, he was taken out ; covered with flannel ; and put on his bed. A most profuse diaphoresis ensued ; and he felt so much relieved, that he said, he then had a secret hope that he should recover: but, within an hour, on attempting to drink some lemonade, his spasms returned as violently as before, and were more general ; but seemed to remit at shorter periods.

At eight o'clock, he was anxious to try the warm bath again ; and was placed in it as soon as possible, but without any good effect. He could bear it but a few minutes, before he became faint ; and spasms attacked him in this situation. He passed a better night than he expected ; and obtained some sleep, by keeping his head accurately balanced.

Friday the 12th. This morning he seemed better; his spasms were not so violent; and he was much encouraged. A laxative enema was administered; as nothing had passed his bowels since Wednesday morning. In the afternoon, spasms returned more violently than ever, and were more general. The warm bath was again used, but without procuring any relief: and he passed a very distressing night.

Saturday the 13th. A cathartic of calomel was proposed, which met his approbation. It is to be observed that he now preserved his reason entirely; and was unfortunately able to judge for himself of his situation, and the full effect of every application. He had, from the first moment, considered his case as out of the reach of medical assistance.

This morning, electricity was proposed, which he approved; and such sparks were drawn as he was able to bear, without producing spasms, from the parts most affected. The electric fluid was passed through him in various directions, for about an hour. He thought himself calmer in consequence of the application; and passed the day without violent spasms. Electricity was repeated in the evening, but without any apparent effect. His sensibility had much increased since Thursday night. Constant attention was necessary, from the physician, to keep the muscles exactly balanced.

In the evening it was agreed to make use of mercurial frictions; as there had been some similar cases related, in which this application had succeeded. It was used through the night very freely. A laxative enema was also administered, but without effect. His thirst was very great. From 9 o'clock in the evening, to 6 o'clock the next morning, he drank five pints of cold water, and as much lemonade.

Sunday 14th. A discharge from his bowels was produced; but was not considered as sufficient: and ten grains of calomel were given him, with one hundred drops of laudanum. He passed a tolerable day
without

without any violent spasms; took but little food, as his stomach nauseated it; but drank cold water and lemonade in large quantities. At 4 o'clock in the afternoon, an enema was administered of broth and half an ounce of laudanum. It was agreed to omit the mercurial frictions; and keep him as quiet as possible; and to give him as much food as could be retained on his stomach, or by his bowels. The laudanum soon had an effect. At 5 o'clock he lay quietly sleeping under its influence. Appearances were favourable at this time, in the opinion of all the medical gentlemen present. He continued quiet, and slept easy till ten o'clock, when a laborious respiration took place. An attempt to awake him was made without effect; and the difficulty seemed to increase very fast. He was then raised up in his bed; and carried to a chair, without any signs of life, except an interrupted catching for breath, and a very feeble pulse. The most stimulating volatiles were applied to his mouth, nose, temples, &c. without any effect. At 11 o'clock his respiration was scarcely perceptible, and his pulse intermitted. He was laid on his bed as a dead man. In a few minutes his pulse seemed more connected. He was raised up on the side of the bed; all the windows were opened; and an enema was administered, of a solution of cathartic salt in strong peppermint water, which, in a few minutes, operated very largely; and part of the laudanum was evacuated. His respiration gradually recovered; and his pulse rose full. These circumstances induced his medical attendants to repeat the enema as before; at half past 12 o'clock, he was again placed in his bed, and breathed tolerably easy; and had a copious involuntary discharge. The external stimulating applications were continued; and his spasms returned in a slight degree, just sufficient to lock his jaw during their continuance. Every muscle had been perfectly relaxed since 10 o'clock. His respiration grew gradually better; and at 3 o'clock he

he was able to speak; and found, to his great surprise, the muscles of his jaws relaxed, and as free from spasm as ever. His thirst was violent: he drank, from 3 o'clock to half past five, one quart of cold water, two quarts of lemonade, and a bottle of spruce beer. After this he slept quietly half an hour. There seemed to be a singular alteration, and he was very much elated; and fully believed, that a complete crisis had taken place. He continued free from any spasm, particularly in his jaws and neck, till seven o'clock in the morning.

Monday 15. At eight o'clock his left leg and thigh were extremely affected with spasms. The violence and pain of them were so great, that during three hours, he was, for the first time, deprived of his reason. At the intervals he begged for an enema of laudanum, as the only thing that could save him from the severest torture. Electricity was first tried on the part, but without any effect. Afterwards, an enema was given with one hundred drops of laudanum. The spasms of the abdominal muscles forced it from him immediately. His sensibility was so extremely increased, that opening a door, walking in his room, or speaking louder than a whisper, would produce spasms too distressing for language to express. Soon after the clyster came from him, he had several free discharges; and a diarrhœa took place, which lasted through the day. In the evening, a julap of oil of cinnamon, and thirty drops of laudanum, was given, which checked the discharges; but he passed a very restless night. Towards morning his spasms relaxed, and he slept a little.

Tuesday 16th. This morning he seemed tolerably easy. At 12 o'clock, a spasm seized his diaphragm and lungs. Extreme difficulty of respiration came on; and he appeared to sink under his complaints; took leave of his family; and made several arrangements respecting his property, and his funeral, with great composure: satisfied that, from the parts at-
tacked

tacked, it was impossible for him to live but a few hours. Veficating tincture of cantharides was applied on his breast; and a tea spoonful of Hoffman's anodyne mineral water was given him, without any effect. When life was just quitting him, a large discharge of flatus from the intestines, followed by a fetid discharge of excrement, gave immediate relief. An enema of a solution of cathartic salt was administered, which gave him two discharges. He seemed totally disappointed in being thus relieved; and considered it as a singular medical change.

At seven o'clock in the evening, he took a large spoonful of Huxham's tincture of bark, with two spoonfuls of wine; which proved very grateful. His pulse was very feeble, but his spasms seemed to have left him altogether. It was agreed that he should repeat the last-mentioned medicine every hour. He asked for cold cider, which he found very grateful to his taste. At 8 o'clock he repeated the tincture of bark and wine; and asked to be turned in his bed, which was immediately done. He perceived a spasm, and called for a pillow to raise his head a little; which being placed agreeably to his wish, he stretched himself out during the spasm; and his respiration and pulse ceased instantly, without the least emotion. The medical gentlemen, who constantly attended him, supposed that a spasm had seized his heart, which deprived him of life.

Wednesday morning. As it had been invariably his request, that, after his death, his foot might be examined, his family consented. The skin and cellular membrane were removed; and the nail could be traced to the sheath of the tendon, which was found to have been perforated; it did not enter the tendon, but passed by the side of it to the periosteum of the bone, which it had not affected.

Under the tendon was a small cavity, about the size of a pea, discoloured throughout, with evident marks of previous inflammation.

The

The phalanx of the toe was taken off; but no further discovery was made. From Wednesday, the 10th of September, to his death, he never was without some medical friend in his chamber. And from Friday morning he had two, and frequently three or four with him. His situation was such, that without some person well acquainted with the profession, his distress must have been exceedingly increased.

ART. 22. *An account of the effects of Negative Electricity, in cases of Burns.* By Mr. John Vinall. (*from the same.*) ‘In making use of my large electrical machine,’ observes the author, ‘which is constructed with both a positive and a negative conductor, the air being humid, and consequently unfavourable for electrical experiments, I made use of a small iron pan with some coals under the machine, in order to qualify the surrounding atmosphere, so as to answer my purpose. By accident I burned my thumb with the pan, so much as to cause me great pain. Knowing that in some instances, I had been relieved of slight burns, by holding the part affected to a common fire I held my thumb at a small distance from the *negative* conductor; put the machine in motion; and to my surprise found, that in a few seconds of time, the effects of the burn were destroyed; that my thumb was perfectly at ease; and that no blister arose, as would, I think, have been the case if I had not made use of electricity. I met with a similar instance not long after: I made use of the same remedy, and received the same benefit.

‘A few weeks after this discovery one of my daughters scalded her arm from her wrist to her elbow, with the steam from the tea kettle, which produced a great inflammation upon the part, attended with much pain; and it is highly probable a blister would have succeeded. I desired her to hold her arm to the *negative* conductor; and in a few minutes, the pain ceased, the

the redness subsided, and her arm was perfectly cured.

ART. 23. *Description of a case of Hydrocephalus.* By M. TENGHILL, professor of surgery at Quiers (*Mem. del 'Acad. Roy. des Scien.* 1790-91, Turin). The subject of this case was a child, who was born with a tumour or cyst hanging down from the back part of the head, which communicated with the cavity of the cranium.

ART. 24. *Account of a case in which a stone, formed in one of the kidneys, was extracted through an abscess in the back.* By Herman Schützercrants, M. D. (From Kongl. Vetenskaps nya Handlingar, T. xii. Stockholm.)

ART. 25. *An Account of the poisonous quality of the Juice of the Root of Jatropha Manihot, or bitter Cassada; and of the use of Cayenne Pepper in counteracting the effects of this and some other poisonous substances; with remarks on the efficacy of the Spigelia Anthelmia in Worm Cases.* By James Clarke, M. D. Physician in Dominica. The observations here made, our readers will perceive, are not of so local a nature, as to be unimportant in a general point of view. 'The pernicious quality, Dr. Clark observes, of the juice of the roots of *Jatropha Manihot*, or bitter Cassada, has been known ever since these islands were first cultivated by Europeans. It is not certain whether this plant is indigenous, or whether it has been brought from Surinam, Demerary, or some other part of South America, where it is planted, prepared, and used as bread by the Indians, in the same manner as it is by the red Caribs, or true Aborigines of these islands, at this time.

'From the very sudden effects of the juice of the roots of this plant on negroes who had drank it intentionally, or on those who had eaten the roots by mistake;

take ; and also from the fatal and speedy effects of it on horses, mules, cattle, goats, sheep, and on all kinds of poultry, which I have been an eye witness of, I have been induced to consider it as the most powerful narcotic vegetable poison that we are acquainted with at present, not excepting even the cherry laurel water. The Indians of South America, and the Caraibs of these islands, who appear to be the same race of men, boil this juice with Cayenne pepper and salt, which they use as sauce to their fish, and soak their Cassada bread in it before eating it ; from which circumstance I was led to make a few experiments, in order to ascertain whether boiling destroyed the poisonous quality of this juice, or whether its effects as a narcotic were counteracted or destroyed by the pepper.

‘ In July, 1794, I procured four large bull frogs (*Rana latrans*,) and after grating several roots of Cassada, and pressing out the juice, I put half a pint of it apart, and boiled a pint of it slowly, till it was reduced one half, of which, after letting it cool, I gave four tea spoonfuls to two frogs, and the same quantity of the raw juice to two more ; not more than one half remained in the stomachs of each. Three hours after, the two frogs that had swallowed the raw juice died. I repeated the dose of the boiled juice to the two others at this time, and one of them died in an hour after, but the other survived some hours ; it was, however, motionless, and insensible to the prick of a pin at the time the other died. From this I found that the boiled juice poisoned as well as the raw, although not quite so soon. But suspecting that the juice had not been boiled sufficiently, I had some more boiled down to one fourth of the quantity, when it became a little thick, resembling a thin jelly of starch. I gave four tea spoonfuls of this juice to two frogs as before, and the same quantity of raw juice to two more. One of these that took the boiled juice died in three hours, and the other in the night, after
having

having had the dose repeated ; as did those which had taken the raw juice : it might be about five hours from the time the juice was given to each of them, they died. It would seem from these trials, that the boiled juice poisoned sooner than the raw ; but upon repeating these experiments frequently, it was found, in general, that the raw juice was more quickly fatal. The difference in this instance arose probably from the whole quantity of the juice not reaching the stomach, or from their having rejected a great part of it after it had been swallowed. This happened, more or less, to be the case in all the experiments upon them.

‘ As these animals are known to be remarkably tenacious of life, I thought it might give some idea of the great power of this poison, to know how long they would live after having been deprived of their vital parts. With a view to this object, I cut out the heart of a frog, and stitched up the thorax immediately, and at the same time I cut off the head of another frog ; the heart continued to beat an hour, and both frogs lived near two hours ; so that they were killed nearly as soon by the Cassada water, as they were by destroying parts so essential to life.

‘ I poisoned lizards also with this juice, but the effects of it upon animals with cold blood, was not near so sudden as on those with warm blood, such as sheep, kids, turkies, fowls, &c.

‘ I have known a strong negro die in little more than an hour after drinking perhaps half a pint or more of this juice ; and a strong mule in much less time. Negroes who had eaten the roots roasted, lived three or four hours after. Finding, from these trials, that neither boiling nor roasting destroyed the poisonous quality of the Cassada root, I suspected that the capsicum, or Cayenne pepper, boiled in it by the Caribs had this effect, and that it might be the real antidote for it. I therefore procured more frogs, to some of which I gave the raw juice and the boiled, as in the former experiments, and with the same effect ; to others I gave

gave the juice boiled with a sufficient quantity of capficum to make it taste pretty hot. The frogs that took the juice in this way lived, and seemed to be enlivened by it every time it was repeated, which was very frequently, and they did not die afterwards.

‘ The white people in South America use this sauce with their fish, as the Caraibs do in all the islands where they reside, without suffering any inconvenience or bad consequence from it. It appears, therefore, that the action of the capficum, as a powerful stimulant to the stomach, and to the system in general, counteracts the sedative or narcotic powers of this juice. Capficum has been known, long ago, to possess the power of counteracting or preventing the poisonous effects of fish; and strong liquors, wine, and spices are administered with the same intention to those who happen to be affected by poisonous fish. This fish-poison seldom destroys life entirely, except the deadly poison of the yellow bill’d sprat, as it is called, which kills very speedily; but those who have eaten of the other kinds of poisonous fish, are frequently reduced to the last extremity by the vomiting, and life is almost extinguished before stimulants can take effect.

‘ A singular effect of fish-poison is to remove the epidermis in patches, or spots, about the hands and feet, which continue white in people of colour, and of a pale yellow colour in white people, for life.

‘ The cause of some kinds of fish being poisonous, I suspect to be their feeding on submarine narcotic weeds, and not to their feeding on copperas banks in the sea, as hath been commonly supposed. The effects of the poison of the black land crab, which feeds upon the mountain Mahault, are exactly similar to those arising from poisonous fish.

‘ The treatment of those who have taken a quantity of the Cassada juice, or eaten the root, is the same as is generally practised for all other narcotic poisons, viz. to empty the stomach as speedily as possible, and afterwards

afterwards to administer the most powerful cordials and stimulants.

‘ In cases of this sort, when I have been called before the patient had lost the power of swallowing, I have always given, to full grown robust people, half a drachm or two scruples of white vitriol, and less in proportion to such as were weakly, or to children. This dose commonly operated in ten minutes, and sometimes sooner, if the patient had not become insensible, in which case the dose was repeated soon after. In every case I have seen, there was such a violent spasmodic contraction of the muscles of the throat, that it was with the utmost difficulty any liquid could be got down. I have seen none die, however, who could swallow.

‘ After the operation of a vomit, strong ginger tea with some rum in it, when wine could not be procured, was given in small quantities at a time, till the comatose symptoms (which proved constantly fatal when no internal remedy could be administered) were entirely removed. Some have been carried off by a strong convulsion; and large evacuations by stool were the forerunner of death. The stomach and bowels were always distended to their utmost extent, and the pupils of the eyes were much dilated.

‘ I have opened the bodies of many who died of this poison, but could discover nothing remarkable, only that a great deal of very offensive air rushed from the stomach when it was opened, and the Cassada, or part of the juice was found in the bottom of it.

‘ No cases of negroes being poisoned by this juice, have occurred to me since I found the capsicum to be an antidote for it.

‘ Cayenne pepper grows in great plenty upon all estates in this island, and on such as are at a distance from medical aid, and not provided with a vomit to administer directly, it ought to be tried. A quantity of it bruised in warm water and poured into the stomachs of horses, sheep, poultry, or stock of any kind,

which have drank this juice, might be the means of saving them. No means hitherto tried for the recovery of animals that have drank it, have proved successful. *Capficum*, would, no doubt, relieve those who have eaten *farine* (or the root) not perfectly dried, by which the bowels are so much distended, as sometimes to endanger life.

‘ When I was employed in making these trials on *Cassada* water, I also poisoned frogs, lizards, &c. with the juice of some other narcotic plants which are indigenous here, viz.

Solanum mammosum, Cock-roach Apple.

Jatropha Curcas, English Physic Nut.

——— *urens*, Prickly Nut.

Datura ferox, A species of Thorn Apple.

Spigelia Anthelmia, Worm Grass, a species of Indian Pink, called, by the French Inhabitants, *Brenvillie*.

‘ The juice of the four first proved fatal to the frogs nearly as soon as that of the *Cassada*; but it is extremely acrimonious and therefore difficult to be given. The last is not so powerful a narcotic, and has been long in use as an anthelmintic. It differs from the *Spigelia Marilandica*, or Indian pink, described by the late Dr. Garden, of Charles Town, South Carolina, in the third volume of *Essays Physical and Literary*; the roots of the *Spigelia Anthelmia*, being so fibrous, that it cannot be reduced to powder; but the plant possesses the same virtues in its leaves, feeds, and stalks, that the other species, or Indian pink, does in its roots.

‘ The leaves boiled, or infused like tea, form a very powerful vermifuge, but when given in too large a dose, it has proved fatal to very young children, and it has on this account been laid aside for some time. Of the leaves and feeds, dried and pounded, from five to ten grains may be given, however, to a child above two

two years old without any risk ; but the most common way of preparing this remedy for worms, is to make a strong infusion of the whole plant in boiling water ; to which, a quantity of the rinds of four oranges, or lemons, is added, and some of the juice also ; this is afterwards strained, and boiled to the consistence of syrup*, with muscovado sugar. A table spoonful or two of this syrup given to a child from two to six years of age, thrice a day, for two days running, and a proper dose of *Ol. Ricini*, the day after, seldom fail to bring away a number of *lumbrici*, or round worms, to which children, particularly in warm climates, are remarkably subject. It is seldom given to children under two years old ; and during its use, it is necessary to confine the patients in a dark room, as the light makes them quite giddy, the pupils of their eyes being dilated in an astonishing manner, and they feel a pain in the balls of their eyes. When given in too large doses it occasions dizziness, loss of sight, and slight comatose symptoms, which are removed by a spoonful or two of lime juice and water, or vinegar, and by washing the face with cold water. It seldom occasions sickness at the stomach ; and when used in small doses, and the precautions above mentioned had been attended to, I have never known a single instance of its proving fatal, or even giving occasion for a serious alarm. It is rarely administered, however, until other vermifuge medicines have been tried without success, or until the case becomes very urgent and dangerous, owing to prejudices entertained against it. The number of worms that are discharged by the use of this syrup, in the space of two or three days, is almost incredible ; they often amount to fifty or sixty, and sometimes to a hundred in that time. The syrup might be sent to England,

* A handful of the plant to a gallon of water is the usual quantity. This is allowed to infuse, or rather simmer, for twenty-four hours, till one-fourth part of it has evaporated. The orange peel and acid are added, and a sufficient quantity of sugar to form it into a syrup, about an hour before it is taken off the fire.

but it would not keep long enough to be equally efficacious there. The dried leaves and seeds, however, might be sent and used in powder; in which state I have no doubt of its proving as powerful and safe a vermifuge, as it does in the form of syrup.

ART. 26. *An account of some Experiments made with a view to ascertain the comparative quantities of Amylaceous Matter, yielded by the different vegetables most commonly in use in the West India Islands.* (By the same.)

	oz.	dr.
From these experiments it appeared that four pounds of <i>Marante Arundinacea</i> , (arrow-root) yielded of Amylaceous Matter,	5	0
<i>Jatropha Janipha</i> (sweet Cassada) not poisonous,	13	6
<i>Jatropha Manihot</i> (common bitter Cassada) the water of which is poisonous,	10	6
<i>Dioscorea Triphylla</i> (couch-couch, or yampee)	5	2
<i>Dioscorea</i> , (Guinea yam)	8	0
<i>Convolvulus Batatas</i> , (West India sweet potatoe)	8	0
<i>Arum esculentum</i> , (Eddoes, white and yellow Tanniers, Malingas, or Coccos)	11	0
<i>Musa Paradisiaca</i> , (plantane) full grown, but peeled and grated,	10	2
<i>Solanum Tuberosum</i> , (potatoes) procured from Ireland,	6	2

Four pounds of superfine baltimore flour yielded two pounds of indifferent starch; but this was not a fair trial, as the husks ought to have been taken into the account. On each of the substances above mentioned, Dr. Clark makes a few remarks. With respect to the *Jatropha Manihot*, he observes, that the starch of this is equally nourishing as that of the *Jatropha Janipha*, but care must be taken to dry it well, as the juice is poisonous. By turning this starch with a flat piece of wood, on a plate of iron well heated, the
tapioca

tapioca is made, that has been so much celebrated for its nutritive and restorative qualities.

ART. 27. *A fatal instance of the poisonous effects of the Oenathe Crocata Linn, or Hemlock Dropwort, By Robert Graves, M. D. of Dorchester.* The root of the Hemlock Dropwort was, in this instance, as it frequently has been, mistaken for the water-parsnip.

A catalogue of new books, as usual, concludes the volume.

ART. XXXIV. *Philosophical Transactions of the Royal Society. For the Year 1797. Part I.*

(Continued from page 249)

THE next article that we have to notice in this collection is, "An Experimental Inquiry concerning Animal Impregnation." By John Haighton, M. D.

From the experiments of De Graaf on this subject we learn, 1. That the ovaries are the seat of conception. 2. That one or more of their vesicles become changed. 3. That the alteration consists in an enlargement of them, together with a loss of transparency in their contained fluid, and a change of it to an opaque or reddish hue. 4. That the number of vesicles thus altered corresponds with the number of foetuses, and from these are formed the true ova. 5. That these changed vesicles, at a certain period after they have received the stimulus of the male, discharge a substance, which, being laid hold of by the fimbriated extremity of the fallopian tube, and conveyed into the uterus, soon assumes a visible vesicular form, and is called an *ovum*. 6. That these rudiments of the new animal, which for a time manifested no arrangement of parts, afterwards begin to elaborate

and evolve the different organs of which the new animal is composed. To these facts may be added, that the calyx or capsula, which formed the parietes of the vesicles, thickens, by which the cavity is diminished. This cavity, together with the opening through which the foetal rudiments escaped becomes obliterated, and from the parietes of these vesicles having acquired a yellowish hue, they are called *corpora lutea*.

The intention of the present essay, Dr. Haighton remarks, is to explore the *proximate cause* of the impregnation of animals, and to trace with more accuracy the visible effects of it from their first appearance, until the rudiments of the foetus are lodged in the uterus and have assumed the proper character of an *ovum*.

The author first inquires, ‘What are the evidences or proofs that impregnation has taken place?’ To determine this point several experiments were made on virgin rabbits, at different periods, after coition. On examining the ovaries twelve hours after, several of the vesicles, of which these bodies are composed, evidently projected; they had lost their transparency and were become opaque and red. When punctured a fluid of the same colour escaped; the corpora lutea were not very evident.

Twenty four hours after, the colour of the fluid in the vesicles was the same. The vesicles projected more evidently, and their thickened parietes manifesting the commencement of corpora lutea were become more apparent.

The ovaries of another being inspected 48 hours *post coitum*, the vesicles seemed to be in the very act of bursting, and a semi-transparent substance, of a mucus-like consistence, was beginning to protrude from some of them: the fimbriated extremities of the fallopian tubes were preparing to receive their contents, having quitted their usual position, and embraced the ovaries to such a degree, that only a small portion could be seen until the tubes were taken away.

away. Sections being made into the thickened vesicles, the formation of corpora lutea appeared to have made further advances.

In two days and twelve hours after coition, the ovaries of another rabbit were examined. The foetal rudiments had escaped; but the cavity of the vesicles had suffered but little diminution. Bristles were easily introduced by the ruptured orifices. Examination being made on the 3d, 4th, and 5th day, in the last there was but little vestige of cavity, consequently the corpora lutea might be considered as perfectly formed.

Upon the whole then, Dr. H. concludes, that whenever corpora lutea are found, they furnish incontestible proof, that impregnation either does exist, or has preceded.

2. *What is the proximate cause of impregnation?* Some have argued for the application of the semen to the ovaries, by means of the fallopian tubes; whilst others contend for an absorption of this fluid by the vagina, and a peculiar excitement of the whole frame as a consequence, of which excitement the changes produced on the ovaries are to be considered the local effects.

The advocates for the first opinion alledge, that the semen has been seen both in the uterus and tubes and quote as their authority the observations of Morgagni for the former, and Ruysch for the latter.

On the other hand, the contact of semen with the ovaries has been thought improbable, from an analogy drawn from the vegetable kingdom; for admitting the Linnæan doctrine to be true, which contends for a necessity of sexual intercourse in vegetables, it would be difficult to demonstrate to the satisfaction of stern philosophers, that the *pollen* pervades the *pistillum*, and stimulates the contents of the *pericarpium* by contact, to the evolution of the *germen*.

Dr. Haighton endeavoured to determine this question by experiment, and therefore inquires, Is the
passage

passage of the semen by the tubes to the ovaries, essential to impregnation? If not, what other means are employed? If it be true that the fecundating fluid must pass by the tubes to the ovaries before impregnation can take place, it ought to follow as a consequence, that if, from any cause, both these tubes be obliterated, the animal so affected would be barren, or if the animal be multiparous, an obliteration on one side should prevent conception in the corresponding ovary.

Having procured a full grown virgin rabbit, which had betrayed signs of disposition for the male, Dr. H. made an incision into the posterior part of each flank, where the tubes are situated. By means of his finger and a bent probe, he drew out a very small portion of the middle of the tubes, and cut out about an eighth of an inch. The two ends were returned into their former situation, and the wounds closed by the quill suture. As soon as the rabbit appeared in health, it was admitted to the male, but the venereal appetite seemed to be entirely lost. He kept it a month longer in a state of high feeding, but the same reluctance continued. The following spring the aversion was greater. It was now killed and examined; the tubes adhered firmly to the loins at their divided extremities, and their canal was perfectly obliterated. Her ovaries were much smaller than they usually are in breeding rabbits.

In another experiment the tubes were simply divided, without removing any portion of them. The venereal appetite declined as evidently in this as in the former. On examination the tubes were as completely obliterated, and the ovaries had equally degenerated as in the former. A healthy rabbit, which had lately been separated from her first litter, was made the subject of a repetition of the experiment: the result was the same.

The author next tried the effect of dividing *one* tube only. In a full-grown virgin rabbit, one of the fallogian tubes was divided at a little distance from the
extremity

extremity of the cornu uteri. The wound soon healed up, and its health was soon restored, but it betrayed no disposition for the male. On many trials afterwards it always refused, excepting once; this, however, proved unproductive. From examination after death it appeared, that the divided tube was completely obliterated, but the other was found: both ovaries were evidently shrunk, proving that their actions had been languid.

Not satisfied with the result of a single experiment, Dr. Haighton determined to inquire further if it was possible to impregnate an animal in the situation just described. Two other virgin rabbits were, therefore, made the subject of a repetition of the last experiment. The male was offered to them several times during the space of three months. They generally refused him, yet received him twice or three times each during this interval; but neither was impregnated. As the sign of degeneracy from their proper sexual character became daily more evident, they were devoted to an anatomical inspection, and exhibited appearances in the ovaries like the former, but somewhat less in degree.

Another experiment of the same kind was made on a rabbit that had littered ten weeks before. The author endeavoured to get a sight of the ovary, and observed, that the traces of corpora lutea were far from being evident, so that there was no danger of confounding them with any recent mark that might happen. The result was the same as in former instances.

On another occasion the author was more fortunate. The experiment was made on a rabbit, nearly under the same circumstances as the last, and the result was successful; for on admitting the male about one month from the operation, she betrayed no reluctance, and became impregnated. Ten days afterwards she was killed and opened. Both ovaries retained their primitive plumpness, and manifested evidences of impregnation;

pregnation; that is, corpora lutea, bearing the characters formerly mentioned. Those seated in the ovary of the mutilated side did not differ in any respect from the same bodies on the perfect side; but they were unattended with foetuses; whereas in the perfect side there were, as many foetuses, as corpora lutea. The divided tube was found perfectly obliterated.

Now, on what principle could this be explained? It is certain, Dr. H. observes, that neither semen nor the aura seminalis could have touched the left ovary, and yet it bore the most unequivocal marks of recent impregnation. It must depend on some other cause than the actual contact of semen. Why were there no foetuses on the mutilated side; but only the corpora lutea? Is the application of the semen to the vagina or uterus sufficient to stimulate the ovaries to perform their first procreative operations without enabling them to achieve any thing more? and does it require the permanent and active energies of this fluid, operating by direct contact on the surface of the ovaries, to produce their full effects?

Out of six other rabbits, where one of the fallopian tubes had been divided, two of them became impregnated. There were corpora lutea, but no foetuses on the mutilated side. It must therefore be admitted, *that the ovaries can be affected by the stimulus of impregnation, without the contact either of the palpable semen, or of the aura seminalis.*

A female rabbit in high season was admitted to the male, and in a few minutes afterwards the ovaries and tubes were brought into view: the fimbriæ had not embraced the ovaries, but were precisely in their natural situation. The same result appeared in two other instances. These experiments prove, the author thinks, that the semen is not instantly conveyed to the ovaries, *vi jaculationis* of the male. The fimbriæ being examined every hour from the first to the ninth after coition, they were found to remain

main nearly in their usual situation, and the only difference perceived in the last hours, was a greater turgescency of vessels, as if preparatory to some important action. At the ninth hour, the ovaries bore very evident marks of impregnation, and there appeared to have been no action in the tubes by which the semen could have been conveyed to them.

To render this matter **more** satisfactory, the author determined to obliterate **one** of the tubes at different periods *post coitum*, and after the lapse of a sufficient length of time, to notice the effect. His view in this was to allow sufficient time for the arrival of the semen at the ovaries, supposing it to take place; so that if they were stimulated by an effusion of that fluid, either in a palpable or insensible form, there would be allowed time sufficient to produce its effect; and if in this mode foetuses could be formed, whilst by obliterating the tube before coition, nothing more than corpora lutea were seen, it furnished an argument of no inconsiderable force in favour of impregnation by immediate contact; but if on the contrary, corpora lutea *only* were formed, then such experiments would give additional force to the arguments on the other side.

One of the tubes of a rabbit was divided half an hour *post coitum*. After being kept a fortnight, there were no marks of impregnation on either side. In repeating the operation on two other rabbits, in one at four, in the other at six weeks after coition, the first after a fortnight was found not impregnated; the last was. In this there were four corpora lutea and four foetuses on the perfect side; on the imperfect side were three corpora lutea without foetuses. No difference could be observed in the corpora lutea on both sides.

The operation was repeated twelve hours *post coitum*, and the parts examined on the 15th day. The appearances were the same as in the last experiment. Twenty-four hours gave a similar result.

It

It was observed before that the vesicles of the ovaries, forty-eight hours *post coitum* were so prominent, as to be near bursting. At this period therefore the experiment was repeated, and in 14 days the result ascertained, viz. three corpora lutea, and as many foetuses on the perfect side, and two corpora lutea without foetuses on the imperfect one. The mutilating process, then, the author supposes, suspends the effect of that stimulus which impregnation has begun.

Dr. H. next endeavoured to determine the consequence of dividing the tube after the bursting of the vesicles, and after the rudiments of the foetus had passed. The operation was repeated on two rabbits, one of which had received the male two days and eighteen hours, the other two days and twelve hours, there were corpora lutea in both ovaries, and foetuses in both cornua uteri.

These experiments, the author thinks, overturn every argument, which has hitherto been adduced to support the hypothesis, that the affusion of the semen on the ovaries, either in a sensible form, or that of *aura seminalis*, is essential to impregnation: for if the ovaries were susceptible of their proper excitement only by the contact of semen, by what accident has it happened that the effects of that excitement are not more obvious, and further advanced in those experiments, where nothing was done to intercept its course for forty-eight hours, than in those where all communication between the uterus and ovary had been cut off before the means for impregnation had been employed? We should expect in the one case to find the full effects of impregnation, and in the other no traces of it would be seen; instead of which, the procreative actions are no further advanced where there has been an opportunity for the passage of the semen, than in those cases where the passage has been impossible. But if we defer the mutilation, until the ovary has perfected its work, which it does in a rabbit in something

something more than fifty hours from the approach of the male, then the generative process is not disturbed, and the evolution of foetus goes on in the usual manner; for now all the different parts of the uterine system being in a condition to act, each performs its peculiar office.

The operations which take place at the period of impregnation are, by the author, referred to *sympathy*.

The semen first stimulates the vagina, os uteri, cavity of the uterus, or all of them.

By *sympathy* the ovarian vesicles enlarge, project, and burst.

By *sympathy* the tubes incline to the ovaries, and having embraced them, convey the rudiments of the foetus into the uterus.

By *sympathy* the uterus makes the necessary preparation for perfecting the formation and growth of the foetus. And

By *sympathy* the breasts furnish milk for its support after birth.

The next object of enquiry was, ‘ What is the form of that substance, which passes from the ovaries in consequence of impregnation ’ ?

No sooner, observes Dr. Haighton, had the researches of the physiologists retraced the existence of the new-born animal, to the ovaries, than their curiosity was excited to discover the form it assumed, while resident in these bodies, and especially at that particular time when the foetal primordia are about to escape from them. The analogous phenomena of oviparous animals, and the structure of the ovaries as described by De Graaf, concurred to favour an opinion, that in viviparous animals there existed ova in these bodies, and indeed from this very circumstance they received their name. But though several physiologists have concurred in this opinion, there has not been any strict coincidence respecting their state while
in

in the ovary. Some have thought that the vesicles described by De Graaf were the true ova, and that these are the bodies that are expelled by impregnation. Others with greater probability, have considered these vesicles as the apparatus destined by nature, under the influence of the proper stimulus, to form the ovum, and though at all times they contain a glairy kind of fluid, from the stimulus of impregnation, this fluid becomes a small vesicle or ovum seated within the larger vesicle, which now becoming thickened, and acquiring a yellow colour, is called the corpus luteum: from this body the interior vesicle or ovum is protruded.

Others again refuse assent to both these opinions, and contend, that the substance extruded from the corpora lutea has no vesicular appearance; and though by some it has been called an ovum, yet that name is not applicable to it from any resemblance of figure, but rather from its agreement with an egg in being the substance, in which the rudiments of the future animal are contained, De Graaf contended that the primordia foetus, while in the ovary is vesicular, as appears in his work; in which, after describing the enlargement of the proper vesicles usually connected with his name, he says, "*præterea aliquot post coitum diebus, tenuiori substantia præditi sunt, et in sui medio limpidum liquorem membrana inclusum continent, quo una cum membrana foras propulso, exigua solum in iis capacitas superest.*" He is therefore decidedly of opinion, that as soon as the product of conception becomes the subject of notice, it has a vesicular form, and this, he thinks, takes place at the end of the third day, though the substance passes from the ovaries several hours before this time. He seems rather to assert, it passes in a vesicular form, than to prove it; for in fifty-two hours after the approach of the male, he found the ovarian vesicles were empty, though he could not now find the new vesicles either in the uterus or the tubes. But in seventy-

two hours, they were so evident, that he could distinguish with ease the two membranes of which they are formed, viz. the chorion and amnios; so that they cannot be very small at this time. Hence it would follow, that if on a repetition of this experiment on the third day, no vesicles should happen to be found, it would not be from minuteness that they would escape observation; therefore should any one be disposed to search for them, he need not bend his sight, as if looking at microscopical objects.

Valisneri, on the contrary, searched for these eggs with great industry, accompanied with an ardent wish to find them; but though his experiments appear to have been judiciously conducted, he never succeeded.

Haller also maintains, from a regular series of experiments made on sheep (whose term of utero-gestation is five months) that some days elapse between the escape of the substance from the ovaries, and the appearance of a circumscribed body in utero, which can properly be called ovum: and that this does not happen until seventeen days from impregnation. In the mean time, nothing but irregular masses of mucus are found. The circumscribed form at this time acquired seems to depend on the formation of the foetal membranes now bounding the contained mucus-like substance. This apparently homogeneous mass, on the nineteenth day undergoes a change of character; an opaque spot is seen within it, which subsequent observations prove to be the first evident marks of the evolution or formation of the foetus. From this dim speck of animal existence we may observe a series of regular advances, from an inorganized mucus-like mass, to the most beautiful and complicated machine in nature.

In his own experiment, on this subject, the author observes, that in the rabbit, he has never found any thing in the uterus which had a regular circumscribed form, earlier than the 6th day. Before this no-
thing

thing but irregular mucus-like masses could be distinguished.

The next article in the Transactions which we are to notice is one, which makes no improper supplement to the preceding. Its title is, *Experiments in which, on the third day after impregnation, the ova of rabbits were found in the fallopian tubes; and on the fourth day after impregnation in the uterus itself; with the first appearances of the fœtus.* By William Cruikshank, Esq.

The ovaria of quadrupeds often contain vesicles of the hydatid kind; and it becomes difficult to distinguish between these and the real ova. The mark, however, according to Mr. Cruikshank, is, that the ova are inclosed in a capsule highly vascular from arteries and veins carrying red blood. The calyx and the ovum, after impregnation, and even before it, in the state in which the quadruped is said to be *hot*, become black as ink*, from the great derivation of blood; and the ova resemble dark spots: they also come nearer the surface of the ovarium, so as to pout or project, at last, like the nipple of a woman's breast. Some hours after impregnation, the calyx and the coverings of the ovaria burst, and the ovum escapes; may fall into the general cavity of the abdomen, and form an extra-uterine fœtus; but almost always falls into the mouth of the fallopian tube, whose fimbriæ, like fingers, grasp the ovarium, exactly at the place where the ovum is to escape. What the appearance of the ovum was, when deprived of its calyx, or when descending the fallopian tube, was not known, till De Graaf discovered this in the fallopian tubes of rabbits, in the year 1672; he says, "*minutissima ova invenimus, quæ licet perexigua, gemina, tamen, tunica amiciuntur;*" and then adds, "*hæc quamvis incredibilia, nobis demonstratu facillima sunt.*"

* It is rather strange, that so striking an appearance should not have been noticed by Dr. Haighton in his paper.

Other enquirers, however, were disappointed in their attempts to find the ova: Dr. Hunter had his doubts; and Haller positively denies their existence. And we have just seen, that Dr. Haighton was equally unsuccessful in his researches.

Notwithstanding all this contradiction, Mr. Cruikshank was fortunate enough to detect these bodies in a considerable number of trials made expressly for that purpose.

On examining the ovaria of a rabbit at the time of heat, and before being admitted to the male, Mr. C. observed immediately under their external surfaces, a great number of black, round, bloody spots, somewhat less than mustard seeds. These black spots are the calyces, or cups which secrete the ova; the ova themselves are transparent, and carry no visible blood vessels. These calyces, on the expulsion of the ova, enlarge and become yellow, projecting above the external surface of the ovaria, and form the *corpora lutea*; a certain mark of conception in all quadrupeds; and in women themselves, whether the embryo is visible or not. The use of the corpora lutea is not yet made out; but the orifice, through which the ovum bursts into the fallopian tube is often extremely manifest, and always has a ragged border, as lacerated parts usually have. The fallopian tubes, independent of their black colour, were twisted like wreathing worms, the peristaltic motion still remaining very vivid; the fimbriæ were also black, and embraced the ovaria (like fingers laying hold of an object) so closely, and so firmly, as to require some force, and even slight laceration, to disengage them.

In another, two hours after receiving the male, the black bloody spots projected much above the surface of the ovaria, some of the ruptured orifices were just visible. On injection, these spots appeared to be congeries of vessels.

The third day after impregnation, the appearances were the same as in the last, only the corpora lutea

were larger; but though the author examined the fallopian tubes in the sunshine with great care, he could not find any ova, neither in them nor in the horns of the uterus.

Another was examined the fifth day; the corpora lutea were increased in bulk, but no ova were found.

On the 8th day, the ova were observed in the cavity of the uterus, and projected through its substance about the size of a large garden pea. When the posterior part was cut off, and the cavities of the ova cut into, the *liquor amnii* escaped in a proportionate quantity; by their adhesions to the internal surface of the uterus they remained extended. By dropping distilled vinegar on the bottom of the little cups thus made, the foetus became instantly visible.

On the 9th day, the foetus contained within its amnion, floated in another fluid.

On the 11th ova very little larger; the heart of the foetus full of blood; the umbilical vessels very distinct, but no chord as yet.

On the fourteenth day ova proportionally advanced, the parts of the foetus become more distinct.

On opening a doe the sixth day complete, the ova were found loose in the uterus, as described by De Graaf.

The 5th day the ova were found loose in the uterus; but none in the tubes.

The day after having received the male, the left fallopian tube was tied close to the uterus, with a view to intercept the ova. On examining the parts 14 days after, the uterus of the right side was the size of the 6th day, the ovarium and uterus had gone backwards as to the process; and there was no appearance of foetus; though the placenta was very evident on the left side, there was no other appearance of conception in the uterus; no other placenta; the fallopian tube was very large, soft, and tender; the ovarium twice the size of that on the other side, red, and covered with extravasated coagulable lymph; there was

was an hydatid in the course of the tube, containing a clear fluid, but nothing like foetus. Mr. Cruikshank suspects that tying the tube prevented the ova on this side from coming out of the ovarium, and that though they rather increased in the ovarium, the process soon stopped; that the process went on, however, in the other side for a few days, and then stopped likewise. There was universal inflammation about the left side.

On the evening of the 4th day, the ova were all accumulated about the orifice of the tubes.

At the end of the 3d day, the upper part of the corpus luteum, or center, was a little concave, like the head of a turned small-pock, but no evident foramen; the author believes the ova were gone out, but he could see nothing of them in the tubes or uterus: the fimbriæ were very vascular, and wholly covered the ovaria; the peristaltic motion of the tubes was very evident.

Another was examined at the end of the 3d day; ova were sought for in vain on the right side; at last, by drawing a probe gently over the fallopian tube on the left side, before it was opened, more than an inch on the side next the uterus, the author pressed out several ova, which seemed to come from about its middle.

He opened another at three days and a half; ovaria had the appearance as if the ova had not yet gone out; however, many of them were found in the uterus, and many of them in the tubes.

At two days and a half, no ova found in the tubes, nor orifices in the corpora lutea.

From these experiments, and others, which we have not thought it necessary to particularize, Mr. Cruikshank draws the following conclusions:

1st. The ovum is formed and comes out of the ovarium after conception.

2dly. It passes down the fallopian tube, and is some days in coming through it.

B b 2

3dly. It

3dly. ' It is sometimes detained in the fallopian tube, and prevented from getting into the uterus.

4thly. ' De Graaf saw one ovum only in the fallopian tube, *in oviductus dextri medio unum*. I saw thirteen in one instance, five in another, seven in another, and three in another; in all twenty-eight.

5thly. ' The ovum comes into the uterus on the fourth day.

6thly. ' De Graaf did not see the foetus till the tenth day; I saw it on the eighth.

7thly. ' These experiments explain what is seen in the human female. For

(A) ' I shew a child, at lectures, which remained in the ovaria till it was the size of the fifth month; its fluids were all wasted, and its solids were hard and compressed into an oval form; it had the chorion and amnion, its chord and placenta.

(B) ' I also have in my possession the uterus and ovaria of a young woman who died with the menses upon her; the external membranes of the ovaria are burst at one place, and from whence I suspect an ovum escaped, descended through the tube of the uterus, and was washed off by the menstrual blood.

(C) ' The ovum sometimes misses the fallopian tube, falls into the abdomen, and forms the extra-uterine foetus; this sometimes grows to its full size, labour pains come on at the ninth month, the child may then be taken out alive by the Cæsarean section; or, dying and wasting, but not putrefying, may remain without much inconveniency to the mother for many years.

(D) ' The ovum, although it has gone some way down the fallopian tube, may be arrested in its course and become stationary, and form what is called the fallopian tube case. A remarkable case of this kind is given by Dr. Hunter, in his book of the gravid uterus, where the tube burst, and the mother bled to death.

(E) ' Lastly, the ovum comes into the uterus, where there is room for its enlargement, and a passage for its exit from the body.'

Several

Several representations of the ova, in their different stages, accompany the description.

ART. XXXVII. *An Introductory Lecture to a course of Chemistry: read at the Laboratory in Oxford, on Feb. 7, 1797. By ROBERT BOURNE, M. D. Chemical Reader in that University, &c.* 8vo. 48 pages, price 2s. Rivington, London.

IN this elegant little tract, the author observes, that it was, on many accounts, unfortunate for chemistry that its early cultivators, since the revival of learning, directed the knowledge, which they had of its principles, to the solution of one or both of the following problems, *viz.* the transmutation of the baser metals into gold, and the discovery of a medicine which should prevent or remedy all the disorders of the human frame. A few centuries ago, almost every Chemist was an Alchemist. Experience shewed that, notwithstanding the boasts of alchemy, each of the above problems remained unsolved: with regard to the former it was observed, that gold did not become more abundant, and that alchemists sunk into poverty instead of rising into opulence; with regard to the latter it was seen, that men continued the same frail mortals as before, and that disease and death made no distinction between alchemists and the rest of mankind. We feel ourselves entitled to expect something from those who profess much, and who voluntarily engage in great undertakings; hence the honest alchemist, who did not pretend to have made the discovery he aimed at, rendered his pursuit an object of ridicule; while the unprincipled, who falsely pretended to have made this discovery, rendered it an object of reproach. The number of alchemists of the latter description was so considerable, as to cause alchemy to be defined by a great chemist (*Lemery*)

“ *Ars sine arte, cujus principium mentiri, medium laborare, et finis mendicare.*” And this satirical description was justified, both by the conduct and the fortune of the alchemists, in too many instances.

We shall not follow the ingenious author in his proofs of the utility of chemical science, as applicable to many or most of the useful arts of life; its application to medicine is alone connected with our present purpose. And here he observes that, as some compensation for the discredit which the alchemist brought upon chemistry, he discovered, in the various processes to which he subjected metals, in order to arrive at their transmutation, or at the universal medicine, some valuable remedies. These were introduced into practice by the boldness of Basil Valentine in the 15th, and of the famous Paracelsus, and some other zealous chemical physicians in the 16th century. At first, their introduction was strongly opposed by the majority of physicians, who were advocates for a rigid adherence to the tenets of Galen, and who considered these new chemical remedies as violent and dangerous. Thus, in 1566, by a decree of the Faculty of Physicians in Paris, backed by an *arret* of the parliament, antimony was condemned as a poison, and all use of it, either crude, or however prepared, was prohibited; and, in 1609, a physician of the name of Besnier, transgressing this decree, was excluded the Faculty. The Chemical Physicians, on the other hand, lavished upon these remedies the most unbounded panegyric. Truth, at last, was found to lie between the two extremes. The chemical metallic preparations appeared, on the one hand, to be less efficacious in the cure of diseases; and, on the other, to be less dangerous than they had been represented; but, upon the whole, to be extremely valuable acquisitions to medicine. Chemistry naturally, therefore, became a branch of the studies of the physician. It was expedient that he should know the manner of composing the metallic preparations,

preparations, on which a great part of his reliance was to be placed.

Chemistry, Dr. Bourne remarks, is well calculated to assist the physician in his physiological inquiries: he should be able, in prosecuting this part of his studies, to comprehend, and, if occasion requires, to make the chemical analysis of the different solids and fluids of the human body. Not that the knowledge of the chemical composition of the human solids and fluids, leads us directly, or necessarily, to the knowledge of the manner in which they are formed. We cannot account for digestion, sanguification, and most other animal processes, upon those principles which we can apply with success, to explain the changes which take place in inanimate matter; and the chemical physicians, who, in the last century, looked upon the human body as a mere laboratory, were, perhaps, guilty of nearly as great an error, as the mechanical physicians, who thought it a mere machine, the animal functions of which could be explained upon the principles of the Cartesian philosophy. However, without a knowledge of the component parts of the different solids and fluids of the human body the physiological inquirer will make but little progress; he who wishes to investigate obscure causes, must lay the foundation of his researches in the knowledge of the effects. It would be doing injustice to chemistry, to dismiss the subject of physiology without remarking, that one of the most important of the animal functions, respiration, is, in part, a truly chemical process, and that it cannot be comprehended by those who have not made some advances in chemical studies.

Nor is chemistry less an auxiliary to pathological, than to physiological inquiries. In considering the nature of diseases, a share of the physician's attention will be directed to the chemical changes, which they produce on the human frame; and this inquiry presupposes the knowledge of the chemical state of the human solids and fluids, in a state of health. Al-

though the examination of the changes wrought upon the solids and fluids by diseases, does not directly, or necessarily, point out the method of cure ; such an examination, nevertheless, must form an essential part of a correct pathology ; and there are some instances, in which the cure of formidable diseases is successfully attempted by the direct application of the principles of chemistry. Of this nature are those, where acrimony is present in the stomach, whether it has been generated there, or whether acrimonious substances have been swallowed by mistake, or for the purposes of suicide.

The relation of chemistry to pharmacy and the materia medica is no less obvious. If the practitioner be not thoroughly acquainted with the chemical remedies which he employs, if he does not know the different degrees of affinity which subsist between the more simple chemical substances, he will commit great mistakes in his ordinary manner of prescribing. He may bring together compounds, which shall decompose each other, and produce new combinations very different in their medicinal qualities. Where he intended to give a mild medicine, he may give one that is rough ; where he intended to give an active medicine, he may give one that is inert. In other cases, he may bring together substances, which, from their want of chemical affinity, are either incapable of being made up in the form which he prescribes, or which make a very inelegant and unpalatable composition ; and the result of the whole is, that, in these errors, from want of chemical skill, the health of his patients will suffer in many instances, his own professional character in all.

Thus much may be justly urged in proof of the importance of chemical knowledge to the medical practitioner ; and much more might be adduced. It is never to be forgotten, however, and, for the sake of truth, we make the remark, that chemistry has at all times been one of the most fruitful sources of the numerous

meraus hypotheses which have infested the science of medicine. A few years will determine, whether much of the doctrines of the present day is not liable to a similar imputation. It is well to have before us beacons, which may point out the rocks, on which so many adventurers have split.

ART. XXXVIII. *Practical Observations on the Treatment of Ulcers on the Legs, considered as a branch of Military Surgery.* By EVERARD HOME, Esq. Surgeon in the Army, and Surgeon to St. George's Hospital, &c. 8vo. 295 pages, price 4s. 6d. London, Nicol. 1797.

THE difficulties attending the branch of surgery here treated of, though, no doubt, occurring most frequently in military situations, are yet seriously felt by every class of practitioners. A great variety of remedies have at different times been recommended for the cure of such affections, but their success has always been partial and uncertain. This, doubtless, must be attributed to a want of sufficient investigation, which might enable us to ascertain the different species of ulcers, and the causes of this difference, whether constitutional or local. Without such knowledge, all trials of different remedies become so many random experiments, which, by their too frequent failure, discourage the practitioner from prosecuting an apparently fruitless inquiry.

The object of the present publication is, to establish some general principles, that may guide us in the treatment of ulcers in the legs; to arrange them under different heads; and to point out those distinguishing characters of each species, which may make one mode of treatment more likely to produce a cure than others of a different kind: and, lastly, to give an account

account of those local applications, of which the author has had particular experience.

The striking difference which takes place between ulcers on the legs, and those on other parts of the body, is considered as arising from the following causes: the legs, by their situation, are more remote from the source of the circulation than the other parts of the body, and are, therefore, less perfectly supplied with pure blood. In many, and those the most usual positions of these limbs, the blood, in its return to the heart, is obliged to ascend against its own gravity, which retards its progress; and thus the smaller vessels are kept in a state of too great distension and resistance from the pressure of this column of blood.

From these circumstances it must appear, that the legs even in health are weaker in their vital powers than the rest of the body; and when, from previous accident or disease, new parts are to be formed, the actions in the smaller arteries, by which this should be effected, are impeded by the languid state of the circulation in the veins of the limb, whenever the body is put into an erect posture. If, on the other hand, to obviate this disadvantage, the body be kept for any length of time in a recumbent position, this is found so injurious to the general health, as in that way to interfere with the production of healthy granulations.

This deficiency of vital powers in the legs, when compared with the rest of the body, occasions them to be more readily affected by every thing that weakens or disturbs the constitution; and in a diseased state, the symptoms will, of course, be influenced by the natural or acquired peculiarities, as well as by the actual state of the constitution, as to strength or weakness.

It is this influence, which the state of the general system has upon ulcers on the legs, that gives to them a variety of dispositions, and makes many different modes of treatment necessary for their cure.

As

As no two constitutions are exactly similar, so it happens, that an ulcer on the leg has not in any two persons exactly the same character; for whatever general resemblance one may have to another, there will be found also some peculiarities by which they may be distinguished. It is therefore not sufficient for the cure of such ulcers, that the surgeon should be acquainted with the general treatment; a knowledge of these distinguishing peculiarities, and their probable causes, is also necessary to enable him to treat with success the cases of those individuals who may be entrusted to his care.

Ulcers on the legs, Mr. Home thinks, differ from one another according to the following circumstances: local peculiarities; constitutional peculiarities; peculiar disposition of the parts or of the constitution; and diseased disposition of the parts or of the constitution. He has, therefore, divided them into six species, viz.

1. Ulcers in parts whose actions are healthy.
2. Ulcers in parts whose actions are too violent for their powers to sustain.
3. Ulcers where either the parts or constitution have an acquired irritability.
4. Ulcers where either the parts or constitution have an acquired indolence.
5. Ulcers in parts which have acquired some specific action, either from a diseased state of the parts, or of the constitution.
6. Ulcers where the parts are prevented from healing by a varicose state of the superficial veins of the limb.

These are treated of separately; and the medicines suited to them are considered, as applied in four different forms; vapour, liquid, ointment, and powder.

Of Ulcers in parts whose actions are healthy. The appearance of this species of ulcer is well known. The best application is dry lint to the surface of the ulcer, and a pledget of any ointment over the whole, to prevent

prevent evaporation of the matter, and consequent drying. Even in healthy ulcers, however, difference in constitution will give a preference to one application over another. Ointments disagree with some. Bandages are necessary in others. A boy at school, by some accident, had several ulcers in his leg, on which account he was immediately sent home. As he was the son of a nobleman of high rank, every attention was paid to them, all kinds of dressings were tried, but without the desired effect. Under these circumstances it was proposed (as there was nothing in the appearance of the ulcers to account for their backwardness in healing,) to leave off all dressings, and make him wear a pair of loose trowsers, night and day, to prevent any thing from adhering to their surface: under this mode of treatment they readily healed.

Of Ulcers in parts whose actions are too violent for their powers to sustain. Ulcers of this kind differ from those in healthy parts; the granulations are larger in size, rounded upon their external surface, less compact in their texture, and semi-transparent. When they arrive at the surface of the body, they do not readily form skin, and frequently continue to rise still higher, and then entirely lose the disposition to form new skin.

These changes in the appearance of an ulcer are generally produced by some affection of the general health, which is, therefore, to be first attended to. With respect to the ulcers themselves, the first object is, to prevent the granulations from rising higher than the edge of the surrounding skin, since it is a fact well established, that when they are higher than this level they are not disposed to form skin. Caustics, Mr. Home observes, are seldom proper for this purpose; for the very act of destroying the upper part of the granulations seems to increase the growth of the part that remains. If, on the other hand, such medicines

are:

are used as have a stimulating power, which is proportioned to the strength of the granulations, the superficial luxuriant parts, to which they are immediately applied, will be absorbed, and those underneath will be checked in their growth. Instead, therefore, of touching the surface of such ulcers with the lunar caustic, blue vitriol, red precipitate, or any other of the escharotics in use, the same medicines compounded with other substances, which will diminish their activity, and render them only strong stimulants, may be used with advantage. Pressure, by bandage, is often sufficient in this species of ulcer.

Hot fomentations are injurious here: spirit of wine and decoction of poppies form a more useful application. The application of powdered rhubarb seems to agree with the greater number of cases of this kind; whilst ointments, especially mild ones, generally disagree.

Of Ulcers where either the parts, or the constitution have an acquired irritability Under this head are included, not only those ulcers which are evidently irritable in their appearance, but all those likewise, which locally or constitutionally partake so much of irritability as to require sedative applications for their cure. This will be found to comprehend a greater number of ulcers than could at first view be imagined.

The following appearances determine at once this species of ulcer to be present: the margin of the surrounding skin being jagged, and terminating in an edge which is sharp and undermined. The bottom of the ulcer made up of concavities of different sizes. No distinct appearance of granulations, but a whitish spongy substance, covered with a thin ichorous, discharge. Every thing that touches the surface gives pain, and very commonly makes it bleed.

In the treatment of this species of ulcer, a variety of applications are set down, the effects of which must be

be determined by experience. Fomentations with opium are found useful. Poultices of bread and milk, and other substances, frequently agree well. Carbon is said to be an useful application in many cases of irritable ulcer, but the cases are not distinguished. Ointments or bandages seldom agree.

Of Ulcers attended with indolence. The appearance of ulcers attended with indolence is the very reverse of that which was described in those of the irritable kind. The edges of the surrounding skin are thick, prominent, smooth and rounded. The granulations are smooth and glossy on the surface. The pus is imperfectly formed; it consists of pus and coagulating lymph mixed. The lymph is made up of flakes, and is with difficulty separated from the surface of the granulations; so that when the ulcer is wiped clean, the coagulating lymph adheres in several places, giving a white appearance to these parts of the ulcer. The bottom of the ulcer is commonly all of the same level, or nearly so. The general aspect gives the idea of a portion of the skin and parts underneath having been for some time removed, and the exposed surface not having commenced any new action to fill up the cavity.

In some of this species, the appearances are said to resemble much those of irritable ulcers, and are only to be distinguished from the circumstance of mild and soothing applications being of no service, or even aggravating the symptoms.

The applications which are generally useful in this species of ulcer are of a stimulating kind. The solution of argentum nitratum or lunar caustic, is very useful as a local application. It stimulates the granulations, and makes them put on a more healthy appearance. Tincture of myrrh, either pure or diluted, according to the state of the ulcer is likewise an useful application. Mr. Home has given it internally, for the same purpose, but without advantage.

The

The nitrous acid, diluted to such a degree as will fit it for external application, the author has found to be a very useful remedy : a scruple to eight ounces of water will in general answer. This medicine appears to coagulate the pus, which thus forms a nidus for the granulations, better, in many instances, the author observes, than the pus itself, or many other medicines of a different kind. In a few weeks an ulcer of many years standing has skinned over, to the extent of several square inches ; and the new skin, a few days after being formed, has very nearly resembled that of the surrounding parts. The skin, in various instances, has formed before the ulcer had been filled up completely, so that the margin of the new skin was a good deal lower than the surrounding old skin ; but some weeks after being skinned over, this difference of level gradually disappeared.

Of ulcers attended with some specific diseased action, whether constitutional or local. These will be very various, according to the cause on which they depend. They are classed here according to the effect produced on them by different applications.

Of ulcers attended with a varicose state of the veins of the limb. This species of ulcer is seldom very deep ; when it spreads, it is generally along the surface ; its shape is commonly oval, the ends of the oval pointing vertically. The edges of the surrounding skin are commonly neither thick nor irregular, but are imperceptibly lost in the ulcer. The pain which it gives is seldom from the surface, for pressure does not increase it ; but there is an aching uneasy sensation in that part of the leg. This pain is deeper seated than the surface of the ulcer, and very often extends up the leg in the direction of the veins, and is increased to a very great degree if the limb is long kept in an erect posture.

In

In this case of ulcer Mr. Home strongly recommends, other methods failing, tying the enlarged vein in its passage over the knee joint. He has practised it with advantage in twelve instances. His mode of operating is thus described: As the veins are only turgid in the erect posture, the operation must be performed while the patient is standing; and if placed on a table, upon which there is a chair, the back of the chair will serve him to rest upon, and he will have the knee joint at a very convenient height for the surgeon. The leg to be operated upon, must stand with the inner ankle facing the light, which will expose very advantageously the enlarged vena saphe-na, passing over the side of the knee joint. While the patient is in this posture, if a fold of the skin which is very loose at this part, is pinched up transversely, and kept in that position by the finger and thumb of the surgeon on one side, and of an assistant on the other; this fold may be divided by a pointed scalpel pushed through it with the back of the knife towards the limb, to prevent the vein being wounded; much in the same way that the skin is divided in making an issue. This will expose the vein sufficiently, but there is commonly a thin membranous fascia, confining it in its situation; and when that is met with, the vein had better be laterally disengaged by the point of the knife. This is most expeditiously done by laying hold of the fascia with a pair of dissecting forceps, and dividing it; for it is difficult to cut upon parts which give little resistance, and there is a risk of wounding the vein. After this, a silver crooked needle, with the point rounded off, will readily force its way through the cellular membrane connected with the vein, without any danger of wounding it, and carry a ligature round it. This part, or indeed what may be considered the whole of the operation, being finished, the patient had better be put to bed, so as to allow the vein to be in its easiest state before the

the:

the ligature is tied, and then a knot is to be made upon the vein; this gives some pain, but it is by no means severe. The edges of the wound in the skin are now to be brought together by sticking plaster, except where the ligatures pass out, and a compress and bandage applied, so as to keep up a moderate degree of pressure upon the vein, both above and below the part included in the ligature. The inflammation, in general, is very trifling; it does, however, in particular cases, extend for some way in the course of the veins under the skin; but even where this has happened in the greatest extent, it has been attended with no bad consequences. The ligature comes away about the ninth or not later than the twelfth day, after which the parts commonly heal up.

The following cases, which we have selected, will shew the good effects which have arisen from this mode of practice.

Case 1. A man, sixty years of age, had for many years gained his livelihood by going on messages, having been rendered unfit for any more laborious employment by a large ulcer on the left leg, just above the inner ankle. The complaint was of twelve years standing; it had been sometimes much better than at others, but had never been well during the whole of that period.

In the year 1792, it became so bad as to confine him entirely. It was at this time I first saw him. Upon examining the limb, the veins were extremely large and varicose, and the trunk of the vena saphe-na, at the knee, appeared almost the size of the little finger. The size of this vein led me to the idea of taking it up at that part, with a view of relieving the lower branches from the pressure of the blood, which I believed to be the cause why the parts remained weak, and the ulcer could not be healed. I explained my opinions upon this subject to the patient, and told him, that, if he thought it worth while to try it, I was very ready to do it for him. The man's

desire to get well was such as to induce him to embrace the offer of any mode of treatment which afforded the smallest chance of it. The vein was taken up in the way that I have mentioned. He complained of very little pain, no improper degree of inflammation was brought on by the operation, the ligature came away in nine days, and in fourteen the wound was healed.

The ulcer upon the leg was dressed with dry lint ; it put on a better appearance on the second day after the operation ; on the fourteenth it had diminished in size one half, and in twenty-eight days was completely healed. He was also freed from a pain in the course of the veins of that leg, to which he had been subject for many years, whenever he used any exercise.

He returned to his business of carrying messages, and called upon me a year after, perfectly well ; his leg having continued sound.

Case 2. Sarah Stapleton, a cook and housemaid, aged twenty-one years, in January, 1794, was admitted a patient in St. George's hospital on account of an ulcer upon her leg. The ulcer was situated upon the inside of the leg, a little above the inner ankle, had been of several months continuance, and was extremely painful, more particularly so at night, depriving her of rest. The pain was not confined to the ulcer, but seemed to run up in the course of the veins ; this was much increased after fatigue, or having been obliged to stand for any length of time, and consequently was greatest at night after the labour of the day, which, from the nature of her situation, was very great.

On examining the limb, the branches of the vena saphena were found to be much enlarged and varicose. Under these circumstances I proposed making a ligature upon the vena saphena. In performing the operation, which was done in an erect posture, she complained of great pain in the ulcer, from being
obliged

obliged to stand firmly on that leg ; but as soon as the ligature was tied round the vein this pain ceased, and never afterwards returned. In the time of the operation a smaller vein was observed running parallel to the vena saphena, which afforded a reasonable suspicion that the disease might recur : as however this was uncertain, I mentioned the circumstance, and left it to herself to determine whether she would have it taken up at that time, or take the chance of its enlarging, and whenever it did so, have a repetition of the operation. She preferred the last. The ligature came away in ten days, the ulcer on the leg healed up entirely in three weeks, and she was discharged from the hospital perfectly well.

She went again to service, in the capacity of cook, in a small family ; and from the nature of her business was much exposed to the fire, and obliged to stand a great deal, which made the veins of that leg swell and increase in size ; but the leg continued sound, and she had no return of the pain. Fifteen months after the vena saphena had been tied, a vein in the place where the ulcer had formerly been situated burst, and bled freely ; it stopped, however, of itself ; the quantity of blood which was lost alarmed her considerably, and made her return to the hospital for advice.

Upon examining the vena saphena, at the part where the ligature had been applied, I found two very large veins ; so that there must have been, at the time of the operation, two small branches, one on each side of the vena saphena ; one of these only had been observed at the former examination. These two veins were now included in one ligature. This was done April 17, 1795. Tying the veins gave considerable pain, which did not go entirely off for two days, and then subsided : on the 22d, the ligature was removed, after which the parts were much easier, and in a week the wound healed up.

The ligatures which are applied to secure vessels in all operations, while they remain in the wound, act as

extraneous bodies, and keep up a degree of irritation, which although it differs in almost every two patients, is generally considerable; this is known by the relief the patient experiences after their removal. The leg for a time gave the sensation of weakness, and swelled when walked upon for a number of hours: but this gradually went off, and by the beginning of March she left the hospital.

N. B. The swelling of the leg for a few weeks after the operation, is a symptom which occurred in several instances.

‘ In these cases, the author observes’, the vena saphena was taken up on account of ulcers on the leg, proving so obstinate under every mode of treatment which could be devised, that the patients readily submitted to the operation, with a view to have them healed.

‘ In all of them, the ulcers put on a much more healthy appearance, in less than three days after the operation; and from that time, where no circumstance occurred to prevent it, went on healing like ulcers in healthy parts.

‘ The veins of the limb in all of them became evidently smaller next day, in some of the cases in a very remarkable degree; and in the course of a week they were in general very much diminished in size.

‘ In those cases that were attended with fever, inflammation, and general loss of health, all these effects were combined in the same case, and so very similar to what occurs in hospitals, from change of mode of life, and a more confined situation than the patient has been accustomed to, that they are partly to be attributed to these circumstances, and might have taken place if no operation had been performed. It is natural at the same time to suppose, that, in irritable habits, applying a ligature round a large vein may so far affect the general system, as to dispose the body to be more readily affected by such causes

‘ That I may not appear to have laid too much stress upon the effects which confinement and the air of an hospital have upon the constitution of many individuals, particularly after having undergone an operation, I shall state the following remarks on that subject.

‘ The injury the constitution receives from long confinement in an hospital is sufficiently understood ; but that it can suffer in so short a period, as a week or a fortnight, will not be so readily believed, although instances of this kind are not unfrequently observed in practice. Were these effects confined solely to hospitals, they might be attributed altogether to bad air, much to the discredit of those charitable institutions ; but this is by no means the case, as the same thing happens to private patients.

‘ In three different instances of young women, who came out of the country to have operations performed in London, their health began to fall off at the end of the fortnight, and continued to decline till they were carried out into the air ; and from the time of taking the first airing there was so evident an amendment, as to show that air alone was sufficient to bring about a recovery, which very soon took place, by daily going out in a carriage. Their lodgings were in the neighbourhood of Leicester-square, which cannot be considered as a very confined situation. After getting well, their general health did not suffer from remaining some weeks in the same lodgings ; so that London could not be said to disagree with them. In conversations upon this subject with two of these patients, they mentioned that they never could bear being confined to their room, even for a few days, without suffering from it.

‘ If this ever happens in private practice, it must very frequently occur in all hospitals, even the most airy, both from the construction of the wards, and the situation of the buildings. Gardeners, farmers, and persons of that description, are soonest affected by it ;

and I have met with many instances of their losing their health in less than a fortnight in St. George's hospital, and getting well in a few days after being more in the air,

Were we called upon to decide on the value of the arrangement adopted in the present performance, we should express our apprehensions, that there is more of art in it, than is consistent with the perpetually varying and hitherto uncertain, phenomena of the disease. In the present state of knowledge we much prefer the simple view of the subject presented to us by Mr. Baynton *, as applicable to a great majority of cases, to any artificial arrangement, or attempt at nosological distinction. In our opinion, the facts and ingenious observations in the treatise alluded to above, are passed over, by Mr. Home, with much slighter notice than they deserve.

The volume concludes with an appendix, containing observations on the nature and properties of pus, which have already been before the public †.

ART. XXXIX. *Three Treatises: on the Brain, the Eye, and the Ear. Illustrated by Tables. By ALEXANDER MONRO, M. D. Professor of Medicine, Anatomy, and Surgery, in the University of Edinburgh, &c. Quarto, 263 pages, price 1l. 5s. Robinsons. London, 1797.*

THE volume before us might, without much impropriety, have been designated, 'A claim to discoveries formerly made by the author, on the sub-

* *Descriptive Account of a new Method of treating Old Ulcers of the Legs.* By Thomas Baynton, surgeon of Bristol. See Med. Rev. No. 18, vol. 3, page 539.

† Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge.

jects above mentioned,' since the greater part of it is employed in proving and asserting his right. We cannot forbear remarking, likewise, how much the price of the book is unnecessarily enhanced by the very scanty portion of letter-press allotted to the pages: a fault too common at present, and tending evidently to the injury of science, and probably ultimately to that of authors.

The first treatise, then, contains observations on the communication of the ventricles of the brain with each other; and on the internal hydrocephalus. The fact of the communication of the ventricles is so clearly ascertained, and indeed now, we believe, universally admitted, that it would be superfluous to detain our readers on this head, further than to state, that the discovery was made by Dr. Monro, so far back as the year 1753.

The second chapter treats of the situation of the water in the internal hydrocephalus: it is within the cavity of the ventricles, and of course common to all; sometimes with, sometimes without effusion between dura and pia mater.

Chap. 3. Of the changes produced in the texture of the brain and the cerebellum, in consequence of hydrocephalus internus. This disease has been divided properly into two species, the acute, and chronic. In the former, the disease generally proves fatal in less than the space of a month; and it is seldom that more than two or three ounces of water are found within the ventricles. In the chronic species of the disease, the patient survives for many months, sometimes for a year or two. The bones of the cranium are separated from each other, in some cases to a great distance. In the soft spaces between them, the undulation of a fluid is more or less distinguishable, according to the age of the patient, and progress of the disease. From two to five pounds of water have often been found within the cranium.

When one, two, or three pounds only of water were collected, the author observes, it has generally been confined within the ventricles, the sides of which, or substance of the brain bounding the ventricles, have been observed to have been much thinner than they are in health. In some instances, the substance of the brain appears to be indurated; and in others, softened.

When the quantity of water has amounted to five, six, or more pounds, partial adhesions of the surface of the brain to the dura mater have been observed. The cortical and medullary substance have been found to be greatly diminished in their bulk and weight. In some cases, after an enormous distension of the ventricles, large portions of the solid substance of the brain seemed to have been destroyed; and hence, the water was partly lodged within the ventricles, and partly between the surface of the brain and the dura mater.

In other cases little remained of the brain, except its investing membranes, with some of the superficial matter adhering to them; and the osseous matter of some of the bones of the cranium was likewise found to be wasted.

In sheep labouring under the disease, called the staggers, the author has found a bag, containing a watery fluid, and bodies which are supposed to be animated (hydatids) in one of the hemispheres of the brain. Over the bag, the bottom of which was connected to the bottom of one of the lateral ventricles, the medullary and cineritious substance of the brain was consumed, and the bag adhering to the pia mater, and this with the arachnoid, to the dura mater; and over that part of the dura mater, the osseous substance of the cranium was wanting, and a membrane seemed to supply its place. Sheep-graziers distinguish with certainty the situation of this disease, by feeling a soft place in the cranium, at which they make a perforation, and endeavour to extract the sac or bag; but, as the substance of the brain is deeply affected by the disease, few are saved by the operation.

Such

Such are the changes which have been observed to take place in the brain in this disease, by Dr. Monro, Morgagni, and others. The next chapter is an attempt to prove, that these changes are produced by the absorbent vessels. In one instance, Dr. Monro found one of the lobes of the brain, of a dark purple colour, considerably indurated, nearly uniform in texture, and had large and numerous vessels, filled with red blood, in its composition, resembling the lungs in an inflamed state more than the brain. There was no effusion of blood, nor collection of purulent matter. It was evident, therefore, he thinks, that, in proportion to the enlargement of the blood-vessels, and perhaps increase of their number, there must have been an abstraction of the medullary and cineritious matter made by the absorbent vessels.

As the cortical and medullary substances of the brain are not evidently compressible, it follows, the author thinks, that in the cases of sudden apoplexy, epilepsy, suffocation from noxious vapours, drowning, hanging, there can be no such sensible general enlargement of the blood-vessels, as has been supposed and described by authors. But if, by long-continued intemperance or other causes, the blood has been circulated within the head with more than usual violence, there may have been an increased absorption or wasting of the solid substance of the encephalon; and, in proportion to that, an enlargement of the blood-vessels, and evident increase of the quantity of blood within the head.

Chap. 5. *Circumstances enumerated, which prove, that the solid parts composing the other organs of our body are absorbed.* That the solid, as well as the fluid parts of our bodies are under a constant state of change, is a fact, however surprising it may appear, that is rendered exceedingly probable from a variety of circumstances. The changes which the glands and glandular viscera are found to undergo; likewise hæ-
morrhoidal

morrhoidal tumours, and venereal excrescences; are among the proofs adduced by the author on this head. Again, where the skin is extended, and at the same time irritated, by an abscess forming under it in the condensed cellular substance, it is wasted, and sometimes breaks into holes, several days before the purulent matter contained in the abscess is discharged, that is, before the matter is in contact with the skin. In like manner, the fleshy parts of muscles sometimes shrink greatly, lose their red colour, and fibrous appearance, and seem to be converted into white-coloured tough membranes. In other instances, the whole fleshy part of a muscle is removed, without the application to it of fluid or acrid matter, which could be supposed to have corroded or melted it down into a liquid state. A person had been distressed with pains in the intestines. On opening the body after death, the author found, that the distended sigmoid flexure of the colon was firmly united with the skin, and that the abdominal muscles were entirely removed from a space larger than the whole hand could cover. The communication frequently of bursæ mucosæ with the cavity of neighbouring joints is another proof of absorption of solids.

But the most striking proofs that the solids may be absorbed, are to be drawn from attention to the structure and growth of bones, and to their waste by age and by disease. When powder of madder is mixed with the ordinary food of an animal, it communicates its colour to the clear part of the blood, and soon thereafter the bones are tinged. That the red colour of the bones is not owing to the particles of madder mixed with the blood in the vessels of the bone, appears from hence, that the colour was not sensibly changed on the author's injecting pure water into the vessels, and washing the blood out of them. It is certain, therefore, that the colour is chiefly owing to a red earthy matter which has been added to the bones whilst the animal was fed by the mixture of madder.

If

If the madder be withdrawn from the animal, the red colour disappears, which can only be by its absorption.

The comparative lightness of old bones, the disappearance of the sockets of the teeth in old persons, the removal of parts pressed by aneurisms, the loss of weight and bulk in many diseased bones, the changes which bones undergo in rickets and mollities ossium, are all so many proofs of the same thing.

From the whole, it appears, Dr. Monro observes, not only, that the solid parts of the body may be absorbed in consequence of disease; but, that in health, and during the whole course of life, there is such a constant interchange of the particles which compose the solids, by means of the vessels which secrete and absorb, as to render it doubtful whether a single atom remains in our bodies which formed a part of it some years ago.

The next chapter is employed in asserting the authors claim to the discovery of the absorption of solids; a doctrine which he appears to have taught so far back as the year 1759: although it has by many, (we know not whether claimed by him or not,) been attributed to the late Mr. John Hunter, but unjustly.

Chap. 7. *Of the Cure of Internal Hydrocephalus by Medicines.* ‘As probably, Dr. Monro observes, the particles composing the solids of our body are dissolved by secreted fluids, or reduced to a fluid state before they be fit for being absorbed; and as, therefore, the waste of the solids, by the absorption of them must be performed by a much more complex process, than that of fluids; we should, after finding proof that the cineritious and medullary matter of the brain can be removed by it, be apt, at first sight, to suppose, that the internal hydrocephalus could be easily cured by medicine. But when we reflect, that the distension and irritation, which create unusual exertion of the
absorbent

absorbent system, seem to operate still more powerfully on the secreting vessels, and that whilst the absorbents are preying on the solid matter of the brain, the effusion of the watery liquor is increasing rapidly, we begin to perceive, that the cure must be much more difficult than we had supposed it to be; and as we find by experience, that irritation greatly increases the discharge from exhaling vessels, I have often thought that the singular sensibility of the parts of the brain, highly excited by the distension of its ventricles in hydrocephalus, must in it, render the chance of cure far less than it is in other species of encysted dropsy.

‘ Of late years, mercury has been much extolled for the cure of hydrocephalus internus; and various cases of success with it, even after the disease had made considerable progress, have been published.

‘ I shall subjoin a summary account of the cases in which I have made trial of it.

‘ Since the month of August 1779, I have attended twenty-two patients, labouring under internal hydrocephalus, to whom I have given mercury.—Of these fifteen were males, and seven females.—Twelve of them were under seven years of age: nine of them were from eight to fourteen years of age: one was twenty-three years old.—Four of them lived five days only after I was called: nine of them survived seven or eight days: three of them survived ten days: five of them survived thirteen or fourteen days: one, six years of age, survived four months, without any sensible enlargement of his head.

‘ In treating these cases, I generally began with the application of leeches to the temples. I then gave calomel, in such quantity as to act as a brisk purgative. I applied a large blister to the top of the head. In some cases, I kept a portion of the blistered part open as an issue. In others, I applied blisters in succession to different parts of the head. In all of them I directed, that strong mercurial ointment should be rubbed

rubbed upon the skin of the legs or arms, morning and evening; and in several I have added doses of calomel by the mouth; taking care not to give so much of it as to occasion purging. In some cases I combined the powder of squills with the calomel; and, in a few, the powder of the *digitalis purpurea*.

‘In four of these cases, the gums became red, but with little swelling: in four others, the gums were not only red, but considerably swelled. In two cases, there was a free salivation. In the boy, six years old, who survived four months, a profuse salivation was kept up for seven weeks; yet, after his death, eight ounces of water were found in the ventricle of the brain. In none of the other cases, were the effects of the mercury distinguishable.’

As in the greater number of the above cases, the disease had made considerable progress, before the author was called, the effects of mercury in the earlier stages are not fully determined; at the same time, they lead him to suspect, that several late writers are much too sanguine in their expectation of removing hydrocephalus by the use of mercury.

In the last chapter, the author treats of the cure of hydrocephalus internus by surgical operation.

When the water is supposed, from the mildness of the symptoms, and their gradual progress, to be effused between the dura and pia mater, and when a very evident fluctuation can be felt, chiefly at the bregma, we ought, the author thinks, to puncture the dura mater; as this can be done without danger, may give immediate relief, and may have some chance of producing a cure. If the operation is determined upon, the dura mater should be punctured cautiously with a lancet, at the side of the bregma, or as far as possible from the superior longitudinal sinus.

Nowwithstanding this high authority, we may observe, that there are not wanting many important considerations which might deter a cautious practitioner
from

from employing so hazardous an operation. The general want of success attending it, the derangement in the state of the brain, which is likely to follow, from the sudden removal of considerable pressure, and which might well be imagined to induce speedily-fatal symptoms, and above all the probable re-accumulation of effused fluid, are all circumstances much against the performance of such an operation.

When the water is collected within the ventricles, Dr. Monro dissuades us from all operation.

This concludes the first of the treatises in the volume before us. The second essay contains miscellaneous observations on the structure and functions of the eyes. They are, for the most part, so purely descriptive, and depend so much for illustration on the accompanying figures, that our notice of them will necessarily be brief.

The first chapter respects the capsule of the vitreous humour : the second the crystalline lens.

The author combats the opinion, that the fibrous structure of the crystalline lens is muscular, for the purpose of changing its figure, and, consequently, its refractive power, and by this means of adapting the eye to view objects at different distances. The following are his reasons for denying this : 1. In the first place, after the crystalline lens is extracted, the eye, assisted by a common lens, seems capable of adapting itself to different distances : 2. We possess other means of accomplishing this purpose : 3. The external lamellæ of the lens, and the matter which connects the lens with its capsule, are so extremely soft, that such a degree of muscular action of these supposed fibres as could occasion any alteration of its general shape, could scarcely fail to lacerate them ; and 4. In fishes, the lens is spherical and nearly incompressible.

Speaking of the iris, the author observes, that in three cases he has remarked a very striking appearance, which has hitherto escaped observation. In two of these, where the eyes had been long inflamed,
a net-

a net-work of filaments passed from one side of the iris, across the pupil, to the other side of it, covered with paint of the same colour with that of the iris. In the third case, of a person who had had a white cataract in one of his eyes for upwards of 20 years, a net-work of vessels, covered with paint darker than that of the iris, was extended from the iris upon the surface of the cataract. These facts are important to the oculist.

Of the vessels of the cornea it is remarked, that the vessels containing red blood, which are seen upon the cornea after an inflammation of it, are not its original vessels dilated, but are newly-formed vessels rooted in the tunica adnata, and extended, from it, over the external surface of the cornea; hence, surgeons may perceive the propriety of attempting to remove these, and the specks produced by them, by surgical means and external applications. On examining an opaque circle, which, in many very old persons, encroaches upon the cornea, the author has in like manner found it full of very minute vessels, rooted likewise in the adnata, and extended on the external surface of the cornea, without entering between its layers.

Respecting the means by which we accommodate the eye to the distances of objects, Dr. Monro observes, that the external muscles, and particularly the recti, have, by many, been thought to be well adapted for elongating the axis of the eye; and a late writer* alledges, that the recti terminate partly in the external layer of the cornea, and therefore are better suited, than was imagined, for such a purpose. But on re-examining this point of anatomy with attention, "I have found, says Dr. Monro, all the tendinous

* We suppose the writer hinted at here so obscurely (purposely it would seem) to be Mr. Home, who says (Phil. Trans. 1795) that he found the external layer of the cornea to be a continuation of the tendons of the four straight muscles. (See Medical Review, vol. 2, page 326, where this matter is mentioned at length, and again vol. 3, page 208.)

" fibres

“ fibres of the recti firmly attached to the Sclerotic,
 “ at the distance of a quarter of an inch from the
 “ edge of the cornea, and no appearance that any
 “ part of them, or that any membrane produced by
 “ them, is continued over the cornea.”

The author concludes this subject, by pointing out one other means, that had not occurred to authors, which we employ when we view minute objects placed near to the eyes. If we attend to what passes in this case, we may be sensible, he observes, that we bring the upper and under eyelids nearer to each other; and then, by a considerable exertion, contract the parts about the eyes. On considering this, it appeared probable that the orbicular muscle of the eyelids might, by its pressure on the upper and under parts of the cornea, make these somewhat flatter; and of course, protrude the middle part of the cornea between the edges of the eyelids, so as to render it more convex; at the same time increasing its distance from the lens, and lengthening the axis of the eye-ball.

Upon the whole, it appears to the author,

1. That the iris, by lessening the pupil, and intercepting the most diverging rays of light, renders the picture of near objects more distinct.

2. That the recti muscles, by their action, lengthen the axis, because they press chiefly on the sides of the eye-ball; and, further, the cornea is not only more dilatable than the sclerotic in general is, but it will be found that the sclerotic in man, and other animals, is thinner and more dilatable, in its anterior part, and in its posterior part, where the picture is formed, than it is on its sides.

3. That the two oblique muscles forming an oblique girth around the eye-ball, between the lens and bottom of the eye, must, by their pressure, increase the distance of the lens from the retina, or increase the length of the posterior part of the axis of the eye-ball.

4. The orbicularis palpebrarum renders the fore and middle part of the cornea, opposite to the pupil,
 more

more convex; and increases the length of the anterior part of the axis of the eye-ball. And it is evident that all these means may concur in forming perfect vision.

It has been an erroneous supposition (which is here corrected) among anatomists and surgeons, that the two lachrymal ducts, which lead from the puncta, are united before they enter the lachrymal sac. In certain cases it may be material to know, that one of these ducts might be pervious, though the other was obstructed.

The third treatise contains *observations on the organ of hearing in man and other animals.*

It would require the plates which accompany the work, to render these minute descriptions at all intelligible to the general reader. We are, therefore, under the necessity of passing them by.

The following is the order and contents of the different chapters:—*Chap. 1.* Of the size, shape, and relative situation of the cavities of the ear.—*Chap. 2.* Of the structure of the human cochlea.—*Chap. 3.* Of the ear in whales.—*Chap. 4.* Of the ear in cartilaginous fishes.—A summary of the chief circumstances above described.—*Chap. 5.* Attestation as to the facts above described.—*Chap. 6.* Remarks on Professor Scarpa's book on the ear.

ART. XL. *The Anatomy of the Human Body*, vol. I. comprizing the Bones, Muscles, and Joints, 459 pages royal 8vo. price 9s. vol. II. comprizing the Anatomy of the Heart and Arteries, 496 pages, with plates, price 12s. By JOHN BELL, Surgeon in Edinburgh. Cadell and Davis, London.

THE first volume of this work made its appearance some time ago, and we hardly know why it has so long escaped our notice. A system of anatomy offered on a first view little that could interest our attention. The dry, not to say disgusting, stile of most works of this kind, is but ill-calculated to fix the attention of the student to a science more difficult than entertaining, though of great and undoubted utility. On examining the present performance, however, we were agreeably surprized to find the subject treated in a manner at once impressive and engaging. In removing any of that disgust and antipathy to anatomical writings and investigations, which are but too apt to arise in the minds of medical students, by shewing the importance of those pursuits in a practical view, Mr. Bell has done great service to science. He has endeavoured to make his work so plain and simple, as to be easily understood. And he has avoided the tedious interlarding of technical terms, which has been too long the pride of anatomists, and the disgrace of their science. He has endeavoured to preserve the just balance between what is amusing, and what is useful; between the looser doctrine of functions, and the close demonstration of parts.

Such is the general character of this interesting work. In the preface, the author endeavours to impress on the student the importance of anatomical knowledge. This, even while it is neglected, is universally acknowledged to be the very basis of all medical skill. It is by anatomy that the physician guesses

at the seat, or causes, or consequences, of any internal disease. Without anatomy, the surgeon could not move one step in his great operations; and those theories even could not be conceived, which so often usurp the place of that very science, from which they flow as probabilities and conjectures only, drawn from its store of facts.

A consciousness of the high value of anatomical knowledge, Mr. B. observes, never entirely leaves the mind of the student. He begins with a strong conviction that this is the great study, and with an ardent desire to master all its difficulties: if he relaxes in the pursuit, it is from the difficulties of the task, and the seduction of theories too little dependent on anatomy, and too easily accessible without its help. His desire for real knowledge revives, only when the opportunity is lost; when he is to leave the schools of medicine; when he is to give an account of his studies, with an anxious and oppressed mind, conscious of his ignorance in that branch which is to be received as the chief test of his professional skill; or when, perhaps, he feels a more serious and manly impression, the difficulty and importance of that art which he is called to practise.

An analysis of a work of this kind is as unnecessary as it would be impracticable. All that we shall attempt will be, to give our readers an opportunity of judging of the style and general nature of the performance, by such extracts as are likely to prove most interesting. Having gone through the description of the bones, muscles, and tendons, the author offers the following remarks on the nature of parts possessing little, or no sensibility, at least in the healthy state.

I must now explain more fully the constitution and nature of all the less feeling parts: for what I have said might be thought to imply absolute insensibility and total exemption from disease or pain; whereas, the sensibility of tendons, ligaments, bursæ, and joints, stand on the same footing with the feeling of bones: they are in-

sensible in health ; not easily injured , entering slowly into disease ; but their diseases are equally dreadful from their duration and from their pain : for by inflammation, their organization is deranged, their healthy consistence destroyed, and their sensibility excited in a dreadful degree.

The tendons of animals have been cut or pierced with unbowelling needles ; they have been pinched with nippers, and torn and cauterised ; they have been burnt with a lighted stick, while the creatures neither struggle nor shrink from the irritation, nor even give the smallest sign of pain. Oil of vitriol has been poured upon each of the parts belonging to a joint, and a piece of caustic has been dropped into its cavity, but still no pain ensued ; nay some have been so bold, may I not say so vicious, as to repeat these experiments upon the human body, pinching, pricking, and burning the tendons of the leg, and piercing them with knives, in a poor man, whose condition did not exempt him from such hard treatment ; who was ignorant of this injustice that was done him, while his cure was protracted, and he was made a spectacle for a whole city. Without such cruel and inhuman practices, we do not want opportunities of knowing that in the human body also the tendons and bursæ have no acute feeling. When we cut open a fascia or tendinous membrane, there is little pain : when (in amputation) we cut the ragged tendons even and neat, there is no pain : when we snip with our scissors the ragged tendons of a bruised finger, to cut it off, the patient does not feel : when we see tendons of suppurating fingers lying flat in their sheaths we draw them out with our forceps, or touch them with probes, without exciting pain. In the old practice of sewing tendons, there was some danger, but no immediate pain : when we cut down into the cavity of a joint, still the pain is but slight. In a luxation, there is comparatively little pain. There is no pain when the ligament of the patella is broken away from

from the tibia, nor when the great achilles tendon is torn. There is but little pain in the moments of those accidents, which appear slight at the time, but which turn out to be the most dreadful sprains. Yet after rupture of the patella, the knee inflames and swells: after rupture of the achilles tendon, there is swelling and inflammation, with such adhesion of the parts, as makes the patient lame: after the slightest sprain, such inflammation sometimes comes on as destroys the joint. There is but little pain when we first make an opening into any joint; yet it often brings on such pain and fever, that the patient dies. In short, every thing conspires to prove, that though in wounds of the less-feeling parts, there is indeed future danger, there is no immediate pain. Still there are many accidents which prove to us, that even in health, the joints are not entirely exempted from pain: a smart stroke on the knuckles, or a blow on the elbow, or a fall upon the knee, are not perhaps the purest instances of feeling in joints, for such blow may have hurt some external nerve; but when a small moveable cartilage forms within the joint of the knee, though it be small and very smooth, and lodged fairly within the cavity of the joint, it often gets betwixt the bones, causing instant lameness; the moment it causes the lameness, it brings dreadful pains; the pain, the lameness, and all the feeling of inconveniency, subside the instant that the cartilage is moved away from betwixt the bones; and the joint continues easy, till the moving cartilage chances again to fall in betwixt the heads of the bones. Even the pain from a blow on the knee, for example, is plainly within the joint, and is caused by the force with which the patella is struck down against the end of the bones; what indeed is a sprain, but a general violence and twisting of all the parts which compose the joint? These parts are of one common nature, and may be arranged and enumerated thus: A joint is composed of the heads of the bones, swelling out into a broader articulating surface, and

of a thin plate of cartilage, which covers and defends the head of each bone ; sometimes of small and moveable cartilages which rub upon the bones, and follow all the motions of the joint, and, like friction wheels in machines, of human invention, abate the bad effects of motion. There are mucous glands, or rather mucous bags, which convey a lubricating fluid : and there is a burfal ligament which forms the purse of the joint, binds the bones together, contains the synovia, and prevents the surrounding parts from being caught in the joint : There are lesser ligaments on the outside of this, going along the sides of the joint, and passing from point to point : there are great tendons moving over the joint, and bursæ, or mucous bags, which accompany these tendons, and prevent the violence which their continual rubbing might do to the bones. All these parts are of one constitution and nature ; we cannot say that they are insensible, for their feeling is only deferred ; it is slow but not the less severe. The eye feels the instant that the mote falls upon it ; but the skin does not feel a blister, till it has been some hours applied ; the ligaments and joints feel still less, in the instant that any injury is done : but as the inflammation of the blister excites the feeling, and destroys the fabric of the skin, producing pain and derangement of its parts, the inflammation of joints, and of all the parts belonging to them, breaks up the organization of the part, evolves the feeling, and then in them also becomes disease and violent pain. They are slow in entering into action, but, once excited, they continue to act with a perseverance quite unknown in any other part of the system. Their mode of action, whatever it may be at the time, is not easily changed : if at rest, they are not easily moved to action, and their excessive action, once begun, is not easily allayed. The diseases are infinite to which these parts are subject. They are subject to dropical effusions ; are subject to gelatinous concretions ; they are subject to slight inflammation ; to suppuration, erosions of their cartilages and to exfoliation of their bones ; corresponding with
the

the dropsies, suppurations, and mortifications of the softer and more feeling parts. Rheumatism is an inflammation round the joints, with a slighter effusion, which is soon absorbed: chronic rheumatism is a tedious and slow inflammation, with gelatinous effusions round the tendons, and permanent swelling and lameness of the joints. Gout, in a joint, is a high inflammation, with a secretion of earthy matter into its cavity.

‘ The inflammation of tendons is sprain: effusion of gelatinous matter round them is ganglion; suppurations in the tendinous sheaths is whitloae: the inflammation of bursa is false white swelling, not easily distinguished from the true: the disease of the joint itself is either a dropsy, where the joint, though emptied by the lancet, is filled up again in a few hours, shewing how continual, and how profuse, both the exhalation and absorption of joints naturally are; or it is white swelling, which, next to consumption, is the most dreadful of all scrophulous diseases; which begins by inflammation in the joint itself, is marked by stiffness, weakness, loss of motion, and pain; which goes on through all the stages of high inflammation, dreadful pain, destruction of cartilages, enlargement of bones, foetid suppurations and spontaneous openings of the joints; which sometimes stops by an effusion of callus and concretion of the bones, forming a stiff joint; but which oftener ends in hectic fever, diarrhæa, morning sweats, and extreme weakness; so that the patient dies exhausted with fever and pain.’

The second volume consists of two parts; the anatomy and physiology of the heart—arrangement and description of the arteries.

The discovery of the circulation of the blood has been always considered as one of the grandest in science; it has been ranked rather with the great doctrines of philosophy, than with the little discoveries in our peculiar science: nations have contended for the honour of it.

The most important facts in all anatomy, and the chief doctrines of the human body, Mr. Bell observes, must always accompany the two great functions of the heart and lungs. The constitution of the blood; the chemistry of airs; our dependence so incessant and immediate, upon the atmosphere in which we live; the various and singular ways by which the foetus of different creatures, or the creatures themselves (each according to its mode of life), draw their existence from the atmosphere; the various kinds of circulation by which this air is distributed through the system of each; the effects of air peculiarly upon our body; and the effects also of accidents, deformities, and diseases in those prime organs—all this wide circle of physiology belongs, in the strictest and clearest sense, to the anatomy of the heart.

The importance of this part of anatomy to the surgeon is forcibly, as well as agreeably depicted, in the passages which follow. ‘ The knowledge of the arteries bears along with it the whole anatomy of the human body. The nerves accompany the arteries; the lymphatics and veins twine round them; the glands and various organs are composed of them. The intimate structure of parts is known only by understanding the forms of their vessels; and as each individual part is nourished by arteries, he who has studied the arteries fully, knows the whole.

‘ But to the surgeon the knowledge of the arterial system is valuable beyond all calculation or belief. He performs no operation in which arteries are not engaged; he cures no great wound in which arteries are not first to be tied; he enters into no consultation in which the arteries are not first spoken of. Without a knowledge of the arteries, he cannot think sensibly nor act safely.

‘ Most unhappily all this comes to be known only at that period of life when the deepest conviction can produce only fear and perplexity, sorrow and regret. Yet, strange to tell, there is no such conviction; no
regret

regret, no irresolution, no perplexity, is ever seen! A surgeon, as ignorant of the blood vessels as of every other point of anatomy, shall proceed in his operations with a forwardness and boldness, terrible to those who know his danger; yet with a success and good fortune exceeding all belief.

‘ The meaning of all this is very plain. A relaxation in the discipline of the schools is the first cause—an indifference to anatomy, so marked and pointed, that an anatomical thesis in this country was never known. Every young man especially fears the difficulty of this part of anatomy, and shuns it. He is not duly impressed with such a high sense of its importance as to make labour pleasant; and when he is advanced to practice, he takes comfort daily from the mistakes and ignorance of others. A slender consolation! to see exemplified in others the faults and dangers to which we ourselves are exposed.

‘ If these negligences may stand excused on any account, it is only on this: that anatomists have been accustomed to write, not for the public, in plain and simple language, but for each other in an unknown tongue. By this I mean not a foreign or a dead language, but a peculiar stile or phrase, which no one can understand, unless he be initiated; unless he have studied the science itself so intensely, that he has also learned the jargon in which it is conveyed: in short no one but a thorough anatomist can understand it, nor can he without some labour and distress. Anatomists have buried their science under the rubbish of names; there is no difficult nor hard sounding word (which they have any claim upon) that they have not retained; they have choaked their subject with useless minutiae; they have polluted their language, by transferring to it from the Latin many words, which, by their continual inflections in that language, were beautiful, while their unvaried, uncouth termination in ours, is barbarous in the utterance, and interrupts and puzzles the senses: “ They have impressed into the
service

service of their science a great many poor words, that would get their habeas corpus from any court in christendom."

' An anatomist, for example, shall describe an artery as "going to the radial edge of the second metacarpal bone; then supplying the abductor and flexor muscles: then going along the bone of the first phalanx, seated upon this second metacarpal bone," with many other distortions, ambiguities, and little contrivances, to conceal (as one would believe) that he is describing so simple a matter, as the artery of the fore finger; which the reader at last finds out either by some lucky chance, or by thinking how many metacarpal bones there are; and then reckoning them first forwards, and then backwards, that he may be sure which it is that the author means: for his author may count from the little finger towards the thumb, or from the thumb towards the little finger; or he may have a fancy of leaving out the thumb, and reckoning only four. What must be the surprise of any well educated young man, when he reads in those books which he must study, of the regions of the elbow, or thumb, or fore finger? If an anatomist understands such things with difficulty, how distressing must it be to the student?

' This is the scholastic jargon which has so long been the pride of anatomists and the disgrace of their science; which has given young men a dislike for the most useful of all their studies; and which it is now full time to banish from our schools. These are the authors who avoid plainness, as it were meanness; who are studious of hard words, as if that were the perfection of science: "it is their trade, it is their mystery, to write obscurely;" and full sorely does the student feel it.

Want of arrangement again, has still worse effects. Confusion is a monster in science; and Thomson has in his *Man of the Moon*, described such a thing with great spirit and life: "A creature, if that may be called

called a creature, which had no shape, nor form, next rolled towards him, approaching still nearer and nearer, and by various glances and movements, seemed to indicate a sympathy with man: it was a rude unformed mass; legs and arms, fingers and toes, and membranes and glands, and entrails and teeth, were blended into one abominable mass."

' If I should say to my reader there are very near one thousand arteries in the body, going promiscuously to bones, ligaments, bowels, and glands, muscles, and nerves, to a thousand unconnected difficult parts, all which you must know by name—how would he be affected? But when I observe, that these go to the head—the neck—the arm—the leg—he begins to see this confusion of muscles, and glands, and bowels, vanish, and to perceive, that all these arteries may be usefully, and very simply, arranged. When he is next taught to know the course of each great artery, and the parts in which each division and branch of it lies, he perceives clearly that the parts through which it runs, as the armpits, neck, or groin, must limit and regulate the number of its branches, and give to each twig, even its order and name: when next the whole arterial system is marked and chalked out for him in different portions; when there are points of peculiar importance set apart which he is charged to learn with particular care—he sees a good end in all this toil; he begins with courage, and gets forward easily; it becomes an interesting, and, of course, a pleasing task. But still it is a task: and I entreat the young student, as he values his own honour, or the safety of his friends, not to bate himself one iota of the whole. Let him not take an indolent advantage of those arrangements which are meant to promote his industry, not to prevent it. Let him not read only concerning the greater arteries, neglecting the smaller ones; but go through the whole piece of anatomy honestly and fairly. He will no doubt forget in time the smaller arteries; but by having studied even them
with

with diligence, he must remember the great and important arteries with a clearness of comprehension and arrangement, which those who have not gone thus honestly through the whole study can never attain. Let him also remember, that studies like these, well performed during his early years, do, like past dangers, or the remembrance of good deeds, give an ease and pleasure to his after-life.

The arteries, I will now venture to say, should be with the surgeon as familiar as his name; and there is no argument which proves it more strongly than this, that a man of real learning, of sterling good sense, of a clear head and steady hand, a man accomplished in all other respects, and fitted by nature and genius for performing the most difficult operations, if yet he want this part of knowledge, may, in one unhappy moment, do, or neglect to do, things which he must think of with horror during all his life. I know well how little such accidents are thought of, when at last the evil day comes. A surgeon hardly believes this strict knowledge of the arteries to be so great a point. In the midst of an operation, or in a common wound, it gives him no concern to see arteries bleed which he did not look for; nor has he great reluctance to drive his needle among parts which he does not know. An artery bleeds, and he looks for it; he calls out at last to screw the tourniquet, and it stops; the tourniquet is loosened again, and again it bleeds; again the screw is tightened on account of the loss of blood; he expects to strike the artery; he is accustomed to strike it, not by knowing where it lies, but by seeing it bleed: at last some lucky dab of the needle succeeds, or perhaps from faintness of the patient the bleeding ceases: the surgeon is relieved from his present anxiety; but in a few hours he is called back to this scene of confusion and dismay: yet at last the bleeding is some how or other mastered; and thus he gets on through all his difficulties, accident after accident, operation after operation,

operation, till at last he almost forgets that anatomy was a branch of his education, or the knowledge of blood-vessels necessary in operations or wounds.

‘ I will not say, that a man cannot suppress a bleeding from a wound in the arm, because he is not acquainted with the anatomy of the arm ; but this surely, I may be allowed say, that it is a piece of knowledge which at all times, but especially in those circumstances, can do no harm ; and that if you leave a patient to choose betwixt two surgeons, one skilled in the knowledge of arteries, another knowing them only by seeing them spout out blood, it is easy to foretel where his choice will fall.

‘ Perhaps some will be so hardened as to say, “ and yet we seldom hear that patients die of bleeding.” Is it then a merit that your patient is not plainly killed ; that he does not expire among your hands ? Is it nothing to lose blood from day to day ? Is it nothing that your patient is reduced to extreme weakness, suffering every thing but actual death ? Is it nothing that he lies with tourniquets round the limbs in fear and anxiety, attended by young surgeons appointed to watch that bleeding, which may burst out while the patient turns in bed, and destroy him in one breathing space ? Is it nothing to have fresh incisions and new searchings for the artery to endure ?

‘ These are real difficulties and dangers, and they should be provided for ; our honour, as well as our duty, requires it. Bleeding from a great artery is to the patient the greatest danger. The very report of an ill-accident is to the surgeon (though, God knows, he may be blameless) the greatest disgrace ; and lastly, though it should not be so, his taking up a bleeding artery dexterously and quickly, when others have failed, is a great honour.

‘ When we think of all the important consequences of being thoroughly versed in this part of anatomy, they crowd upon our imagination, more in numbers than can be even named. The surgeon may, indeed, provide

provide for the arteries to be cut in a regular operation, by consulting books ; but when he is called to a patient bleeding and faint, perhaps expiring, that person must live or die by his immediate skill ! By his skill he will obtain the good opinion, not of ignorant attendants only, but of the profession : and by a bold and sensible conduct in any difficult situation, he may give them a lesson of real use. Let us but for a moment think of the chances of those wounded in war ;—the alarming, unthought-of, accidents which overtake us daily in private life ;—the wounds and hurts which workmen receive ;—let us reflect on all the kinds of aneurism, both in the heart and arteries, from wounds, from blows, from inward diseases :—let us think of all the hundred operations in which arteries are concerned—and then declare, whether, of all his studies, the young man should not value that most, which makes him so immediately and eminently useful.

Of Mr. Bell's critical abilities, the following is no unfavourable specimen. Speaking of the condition of the lungs in respiration, he notices the common but erroneous opinion, of their filling and emptying themselves, each time of performing this function. The lungs are supposed to contain, at the time of their utmost fulness, about 220 cubic inches of air. When we continue breathing in a natural easy way, we draw in and expel, alternately, about 40 cubic inches ; but when we choose to force respiration, we find that we can expel without danger or harm 70 inches more, leaving only 110 inches remaining in the lungs. Reflecting thus what large inspirations of air we may take, and how very little we do take, we begin to perceive how gentle the motions of the lungs must be.

‘ There remains always within the lungs a great mass of air, which I will call the permanent dilatation of the lungs, which, from the first movements of the child, from the hour of birth till death, and even after death,

death, must remain the lungs. This mass, equal to 220, cannot be entirely breathed out, even the utmost force of respiration expels but the half: this never is done but on extraordinary and most urgent occasions, which do indeed disturb the circulation; as coughing, laughing, crying, or running do. But this great mass is seldom so moved; it is regularly and gently agitated by the change of 40 parts of the 220, which we expire and draw in again at each breath. We do not empty and fill the lungs at each breath; there is on the contrary, a permanent expansion of the lungs, and a mass of air always in them; there is along with this a gentle and regular agitation; and there is changed at each respiration a small proportion of this mass of air. Our lungs are little different (in respect of distention) from those of amphibæ: for their lungs also, as I have described in the frog, are permanently expanded, and, at each respiration, a little dilated and contracted; the air a little changed, a little moved, a little renewed; the change is in both cases placid and gentle, and hardly to be perceived.

With these opinions, concerning the state of our lungs, nothing can appear to me more coarse than the notion of their being entirely filled and emptied at each breath; nothing more ignorant than the supposing them to fall flat, as Hales expresses it, so as to hinder the motion of the blood; and the grossness of this opinion appears in its true light, when I put down this last proof, viz. that for each act of respiration, there are four pulses of the artery, or four strokes of the heart. Is it not plain, then, to the meanest apprehension, that if the blood moves twice through the lungs in expiration, and twice during inspiration; or, in other words, if there be four strokes of the artery for each respiration, and if each of the four pulses be equally strong, that the blood passes through the lungs in all states and conditions with equal

equal case * ? It is also universally believed, and it is indeed a most legitimate conclusion, from this doctrine of the collapse of the lungs hindering the passage of the blood, that if but the foramen ovale or any passage be left open, to let through the blood, that person will live without breathing.

‘ It has been affirmed, that the seal, the beaver, the otter, have the foramen ovale open. In the seal the Parisian dissectors found the oval hole open as in a child ; but when they came to the foramen ovale of the beaver and otter, they found them, and fore against their will, quite close. In their disappointment they could have said any thing ; but all that they thought prudent to say was, that the beaver had not been in the water for a long while, not even to refresh himself ; and that the otter had been close penned up in his hut at Versailles ; and so the foramen ovale had closed in these poor beasts quite close ; and behold they were no longer otters and beavers, but little better than dogs. Although Haller declares, that he had found the foramen ovale open in a man who was hanged ; though Roederer, Cheselden, and many creditable witnesses, have testified the same ; still there has gone along with these confused doctrines about the foramen ovale, a kind of dream (like that concerning the transfusion of the blood) that if but the foramen ovale could be preserved open, man even might be made an amphibious creature. At first this notion begun to peep through the mists of this doctrine ; and you may find an author, when he had dissected a person with the foramen ovale open,

* Their old and favourite experiment, so often repeated by Hooke, Croone, and others, before our Royal Society, viz. of blowing up the lungs of a dog, and then compressing them, is good for nothing : for there the thorax is cut clear away ; the permanent distention of the lungs is entirely lost, and then, no doubt, there is such a collapse of the lungs, as may or rather must hinder respiration ; for the lungs are alternately distended to the greatest degree, and then emptied as completely.

insinuating

insinuating by oblique notions, what a vast pity it was that the man had not known, during his life, how kind nature had been to him, and what a perfect diver he was ! while another says plainly, on a like occasion, “ what a pity it was that this child did not live ! ” we should have seen almost an amphibious human animal, at least a most notable diver. On this slender ground they told the most wonderful tales, among which Pechlinus’s story of the Tronningholm gardener is one of the perttiest, the ice having broken, the gardener, in trying to help out some others, as frequently happens, slipt in himself into a place full eighteen yards deep. There he no sooner touched the bottom, than he felt as if you had clapt a plaster over his mouth ; his feet stuck fast, his body became rigid, and he stood there as stiff as a stake, with no one of his senses about him, except only that he thought he heard all the while the Stockholm bells ringing most pleasantly ; and there he stood for sixteen hours, the folks seeking him up and down, and wondering where he could be : at last having found him, they hooked him out with a pole ; and after much warming, and rubbing, and working, and giving him hot drinks, they got his blood to circulate, and brought him to life again. He had sense enough, however, he said, to feel their hook ; and indeed they had angled so ill, that his head was all bruised, and he had terrible headachs : but, however, the queen’s-mother gave him a good pension, and he was sixty-five years of age when Pechlinus wrote. This is one of the many stories of men preserved by the foramen ovale not having been shut. At first, I say, this opinion began to peep out in hints and reflections ; then it strengthened into wonderful tales of people being recovered who had been under the water six days ; till at last, a great genius undertook to make water-whelps upon a new principle, viz. with the foramen ovale open. This great genius was the Count de Buffon. Indeed, in this very year a very celebrated author, Dr. Beddoes, forgetting, perhaps, how suc-

cessful Buffon was, tells us (page 44.) that “ by frequent immersion in water the association betwixt the heart and lungs might perhaps be dissolved, and an animal be inured to live commodiously under water for any time.”

‘ Let us move just a step backwards in this new trade of making amphibious animals, and observe how the celebrated Buffon succeeded. “ I procured a pregnant bitch (says Buffon) of the large greyhound kind; and when just about to litter, I fixed her so in a bucket full of warm water, that her hinder parts were entirely covered. In this situation she brought forth three puppies; which, after being disengaged from their membranes, were immersed in fluid nearly of an equal temperature with that of the amnios. After assisting the mother, and washing the puppies in this water, I suddenly removed them into a pail of warm milk, without allowing them time to respire. I put them into milk in preference to the water, that they might have an opportunity of taking some food, if they found a desire for it. I kept them immersed in the milk for more than half an hour; and when taken out of it, all the three were alive. They began to breathe, and they discharged a quantity of fluid matter by the mouth. I allowed them to respire about half an hour, and again immersed them in the warm milk, where they remained another half hour. I then took them out; two of them were still vigorous, but the third seemed to languish: I therefore ordered it to be carried to the mother, which besides the three brought forth in the water, had littered other six in the natural manner. The puppy which was born in the water, and had continued one half hour in warm milk before it was allowed to breathe, and another half hour after it had respired, seemed to be very little incommoded; for it soon recovered, and was as active and lively as those which had received no injury. Of the six that were brought forth in the air, I threw away four; so that there remained

mained only two with the mother, besides the one that had been littered in the water. I continued my experiments upon the other two which had been twice immerfed in the milk. After allowing them to breathe about half an hour, I plunged them a third time into the milk, where they remained another half hour. Whether they fwallowed any of the milk, I could not determine ; but when removed they appeared to be nearly as vigorous as before their immerfion.” “ I pushed thefe trials no farther ; but I learned enough to convince me, that refpiration is not fo indifpenfibly neceffary to the exiftence of a new-born animal, as to an adult ; and that by employing certain precautions, it is, perhaps, poffible to keep the foramen ovale open ; and by this means, produce excellent divers, or a fpecies of amphibious animals, which would be able to live equally in air or in water.”

‘ I am forry to fay, that I cannot pay Mr. Buffon the compliment of thinking that he was deceived in fo fimple an affair as this ; yet he could not fucceed. I leave it with my reader to judge, what fhall be faid of Mr. Buffon ; for it was not the foramen ovale that he was to keep open, if he wanted to make amphibix ; but fince the function of the placenta was juft cut off in thefe whelps, and fince he did not allow them the office of the lungs he was to feek for fome other third function, which could ftand in place of the placenta and lungs ; and fince no fuch function has yet been obferved, I judge from all the principles which I have laid down, that Mr. Buffon was telling a vain-glorious idle tale ; that he was confcious, that he had fucceeded in no degree ; and that he could no more have converted them into amphibious animals, than he could have made them what they were, viz. plain whelps. “ Sed quis fallat omnifciam, ut fic loquar, naturam ? Illa non colludit noftris erroribus, et quod ignorantia celaverat fuo detegit tempore.”

We must not omit to mention, that Mr. Bell has published a volume of tables, to explain the anatomy of the bones, muscles, and joints. Price 1l. 1s.

ART. XLI. *Reports principally concerning the effects of the Nitrous Acid in the Venereal disease, by the Surgeons of the Royal Hospital at Plymouth, and by other Practitioners. Published by THOMAS BEDDOES, M. D. Octavo, 101 pages. Price 2s. 6d.*

THE account given by Mr. Scott of the success with which he had employed the nitrous acid in lues venerea, and especially the confirmation of this afforded by the experiments related by Mr. Cruikshank, were well calculated to draw the attention of practitioners to a subject of much importance. The present collection contains the result of further trials of the same kind.

We have first a letter from Mr. Stephen Hammick, jun. assistant surgeon to the Royal Hospital at Plymouth, to Dr. Beddoes, stating, that the *worst* venereal cases were selected for these trials. He observes, generally, that the cases, in which the nitrous acid has been given, already amount to more than fifty in number; and that the success has fully answered the character which has been given of this newly discovered remedy, which effects a cure, for the most part, without impairing the appetite, without requiring any precise or particular regimen or strict confinement, leaving none of those ill consequences that often follow the liberal use of mercury. The nitric acid does not, he further observes, affect the gums, fauces, stomach, or intestines, by exciting vomiting, diarrhæa, or pain, unless it be swallowed hastily, and in large draughts at a time.

Twelve cases are detailed in proof of this; the permanency of the cures cannot yet be ascertained; but

the healthy appearance, and firmness of the granulations ; the softness of the parts, and of the cicatrices, induce the author to suppose that they will be lasting.

The first case exhibited a large, irregular, foul, chancre, on the lower part of the penis near the scrotum, with an enlargement in the right groin ; it had been of three weeks standing, and no medicine had been employed. Two drams of the diluted nitrous acid, with one ounce of lemon-juice, were given daily for fifteen days, and afterwards the same quantity of the acid undiluted for eight days longer, when the patient was discharged well.

In the second case the complaint was of a month standing: the appearance was a very large and deep chancre, extending all the length of the penis on the back part ; a large and extremely inflamed bubo in each groin, with a profuse discharge of matter from the urethra, with ardor urinæ. He had taken different medicines without effect. Two drachms of ungt. hydrarg. were rubbed in daily for ten days. The disease continuing nearly the same (the buboes having suppurated) and the general health much reduced, the nitrous acid was had recourse to, two drachms of which were given daily for the space of a month, in which time an entire alteration, both in his general health, and in the appearance of the ulcers, took place. The acid at this time having occasioned vomiting, it was reduced to one half, and continued three weeks, when the disease was entirely gone.

The third was a case of bubo which had ulcerated, of two months standing ; chancres on the penis ; excoriations and ulcers about the scrotum and anus, with great pain. A good deal of mercurial medicine had been taken without effect. A drachm and half of the acid was given daily for five and twenty days, when he was discharged well.

Case 4. Was enlargement of the glands in the groin, and chancre on the penis, of ten days stand-

ing: no medicine had been used, Acid. nitros. ʒij daily removed the symptoms in about five weeks.

Case 5. A large deep ulcer on the scrotum; pains and swelling in the testicle, and bubo: contracted a fortnight before, and had used no medicine: cured in a month, with two drachms of acid daily.

Case 6. Symptoms nearly the same, with venereal eruption on the pubis: took $\text{ʒj}\frac{1}{2}$ of acid. nitros. daily near two months: cured.

Case 7. Nearly similar.

Case 8. Node on the tibia; had been coming on nearly four months; nocturnal pains. The disorder had been contracted four years before. $\text{ʒj}\frac{1}{2}$ of acid was given daily for near two months, when the patient was discharged cured.

Case 9. Venereal complaint of three weeks standing. Symptoms were phymosis, with profuse discharge; difficulty in passing urine, with chordee. Mercurial frictions were freely used for three weeks; copious salivation followed, but the complaints were much aggravated; and the general health much reduced. Bark, wine, and opium, were next ordered, but without any good effect, and diarrhoea, cough, night sweats, and excruciating pains in the limbs, took place. All these were removed by the nitrous acid in two months, and he was discharged cured.

Case 10. A recent infection: chancre, followed by sphacelus of the glans penis. Medicine had been used before he came into the hospital: cured by the acid in six weeks.

Case 11. Chancres; paraphymosis, and bubo of ten days standing; cured in a month by the acid, without having used any mercurial medicine.

Case 12. Phymosis, followed by sphacelus of the prepuce and part of the glans: got well under the use of the acid in six weeks.

In proof of the accuracy of the statement given by Mr. Hammick, we have the respectable testimony of
Dr.

Dr. Geach, in the following letter to Doctor Beddoes.

Sir, *Royal Hospital, July 26, 1797.*

‘ I do myself the honor, agreeably to your request, of writing to you, and assuring you that the patients, whose cases Mr. Hammick Junior lately transmitted, were regularly attended by myself; and every circumstance was remarked as minutely as possible, and is strictly true. So great indeed has been the success of this nitric medicine in the venereal disorder, *that many patients, who had been broken down by an antecedent use of mercury, under which the disorder gained ground, recovered their health and strength without the assistance of diet drinks, change of air, the bark, or any other tonic medicine whatever.* We have had but few instances where the stomach and bowels have been affected by it; but the precaution of taking it through a narrow glass tube has prevented the acid from affecting the teeth, and the medicine has been rendered more palatable by mixing simple syrup with it; and this addition, as far as we have hitherto noticed, has been effectual enough to prevent both mawkishness and pain. But, although these circumstances have now and then succeeded the use of the nitrous acid, it does not affect the mouth or produce a ptyalism. It does not impair the appetite, it does not require any dietetic regimen, or confinement. Indurated buboes have yielded to it without suppurating; *Phagedenic buboes have healed after unsuccessful trials with mercury; in chancres, however large, or sordid, and in excoriations of the scrotum, however fetid and extensive, the cure, by its use, goes on more rapidly than by a mercurial process.* Such chancres and excoriations have been dressed only with simple ointment, that the patients might not be incommoded by the friction of the linen, and that the effect of the medicine might be better ascertained, when there was no local application. We have not found, after
the

the chancres have been cured by this medicine, that the throat has been affected; a circumstance not unusual, especially when such ulcers have been dressed with any mercurial preparation. *The cases sent by Mr. Hammick were the worst that were received into the Hospital.*

That the nitrous acid has succeeded in fifty cases, or more, is certain;—but it has failed in four or five instances, and failed too, where the cases have been apparently slight. But whether the failure can be imputed to the inadequacy of the medicine, under particular or unobserved circumstances, or to causes not yet explored, I know not: future experience must throw more light on the efficacy of this medicine, which, at present, is only in its dawn. It has removed, in some patients, nocturnal pains. In the gonorrhœa itself it has been tried, as very bad cases only have particularly engaged our attention. In attending to those, we have endeavoured to bring every thing to the test of truth, which ought to be the guide to every man in a profession, which has for its object the restoration of health, and in a disorder, which sometimes baffles the skill of the most experienced. Suffer me to own, that when we first made trial of the nitric acid, no great opinion was entertained of its success. Accustomed to give mercury in this disease, a practice sanctioned by great authorities and time, we were inclined to think that no medicine but mercury would cure it. There was no bias, no predilection therefore, for this new medicine, no attachment to system. But as the nitrous acid was so respectably recommended by yourself, this was a sufficient motive to make trial of it; and nothing but the success that has attended its use, could authorize us to write in this manner to you, who are the best entitled to the earliest communication.

The nitrous acid we have used, has been prepared according to the London College.

Before

Before I close this letter, it will be doing but bare justice to Mr. Hammick, to say, that he has been unwearied in his attention to the cases in question, as indeed he is to every case in which he is professionally engaged, and that his skill and integrity merit all the praises I can bestow.

I have the honor to be, Sir, &c.

FRA. GEACH.

A subsequent letter from Mr. Hammick says, they continue to give the nitrous acid, and with equal success.

We have next an account of the use of the nitrous acid in some cases where *oxygen* seemed to be indicated; communicated by Mr. Sandford, Surgeon, of Worcester. The first was a case of *Fistulæ in Ano*, where a syphilitic affection was suspected. From $\mathfrak{z}\text{i}$ to $\mathfrak{z}\text{ij}$ of acid were given daily for a month; when the disease was cured.

The second case where it was employed was in a man, whose constitution had been broken down by intemperance. No good effect was produced by it.

Mr. Sandford next employed it in a case of lumbar abscess, which ceased to discharge under its use, although the case appeared to be hopeless. The same remedy next succeeded in removing some obstinate venereal ulcers on the shins, and one or two ill-conditioned and spreading chancres on the penis, where mercury, bark, and opium had failed. It was next employed successfully in a carious ulcer of the lower jaw, suspected to arise from a venereal cause.

Respecting this remedy, Mr. Sandford observes generally, that he has found it successful in various cases, where no other medicine had been previously given; and in some, after the failure of the bark, and many other efficacious *tonics* as they are generally called.

Mr. Baynton,

Mr. Baynton, of Bristol, already known to our readers, next gives an account of two venereal cases, which were cured in the last stage of that disease, after a failure of carefully-conducted mercurial courses.

Mr. Bowles, Surgeon to St. Peter's hospital, Bristol, gives an account of three cases, supposed to be venereal, where the nitrous acid was employed, but in all without removal of the disease.

Dr. Girdlestone of Yarmouth says, he has tried the nitric acid in a variety of syphilitic cases, without having been able to effect any cures with it. He has generally found it to produce, within 8 or 10 days, a copious flow of saliva, with tenderness and swelling of the gums, but not unfrequently an increase of the venereal symptoms. He has, however, generally substituted the mercurial frictions, with very rapid good effects. Dr. G. has relieved with this acid, one patient with spasmodic asthma; one with dyspnoea; and two with piles.

Dr. Rutherford of Edinburgh has tried the nitrous acid in lues venerea with various success. In some instances it failed altogether. In others, he says, its beneficial effects have been greater than those of any other remedy in the same space of time. Such salutary effects have been remarked principally in the more advanced stages, when severe pains in the bones, swellings of the periosteum, fici, &c. were present. But he has known the same symptoms to have recurred, soon after the medicine had been discontinued; and when they have done so, and have been no longer affected by the acid, they have given way readily to mercury. He has seen one or two instances which refused to yield to either separately, but which gave way to the two combined.

Following this is a case of phagedenic ulcer succeeding bubo, and spreading to an amazing extent, which resisted every application, and even the acid, for nearly the space of four weeks, before it began to yield. By continuing it a month longer, with opiates,

opiates, and the cicuta poultice, the ulcer, at the time of writing, had nearly healed. The patient took in the whole *one hundred and sixty four drachms of the nitrous acid*; and without producing any appearance of salivation.

In a note on this case, Dr. Geach remarks, that the nitrous acid seems to answer better in buboes, chancres, and excoriations, than in venereal eruptions, disseminated over the whole body.

Such is the outline of the evidence the present pamphlet affords, in support of the anti-syphilitic property of the nitrous acid; and from the whole it clearly results, the editor observes, that where the constitution is broken, the habit feeble or scrophulous, the cure should always be attempted by the nitrous acid, in preference to any other medicine. Enough has certainly been produced to warrant this conclusion. The rank this and other analogous substances are ultimately to hold amongst the remedies of lues venerea, cannot yet be determined; that they will occupy a useful place, there can be no doubt; and it seems to be as certain, that they will afford valuable remedies in many other diseases of the human frame.

The following judicious remarks of Dr. Beddoes are offered to the consideration of those, who shall pursue this subject of inquiry.

‘ Whether we adopt the obsolete, or the prevailing language concerning the operation of mercury, is thus far indifferent. It is easy to conceive the great improbability, that a single power should be exclusively adequate to the removal of syphilitic affections. The supposition is contrary to the general tenor of our experience of nature. Most of her productions appear to be members of a series. There is hardly any substance or agency, of which it can be averred, *nec riget quicquam simile aut secundum*. If mercury eliminate the venereal virus by the salivary glands, other untried bodies may eliminate it by the same, or by other

other emunctories. But salivation not being essential, the curative operation is supposed to consist in contractions of vessels, nervous vibrations, or other actions of whose quality or quantity we have no test or measure. It is, however, difficult to suppose mercury, and mercury only, capable of exciting them: and in whatever you make the operation of mercury to consist, an hundred modes or degrees of action, each different from the other, and all from any mercurials can produce, may be curative of syphilis. Mercurials probably produce other changes in the system, besides those that supersede the effects of venereal infection; and some of these changes appear highly detrimental to certain constitutions. When hurried so as to produce violent salivation, mercurials are said not to have cured syphilis.

‘ Let us, for an instant, suppose that mercurials and the newly tried salts have a common operation, depending on oxygen. Now, it is most likely that there is a given quantity of oxygen gas, which, if inhaled, would cause the same feverishness that has been observed to follow the use of the oxygenated muriate, viz. thirst, whiteness of the tongue, quickened circulation, and fizy blood; or at least, the latter, of these appearances. Will oxygen gas, so affecting the system, cure syphilis? Page 105, part iii. of “*considerations on airs*,” a case of syphilis is related, where oxygen gas was thought beneficial. But the circumstances are indistinct, and I think the air too trifling for any effect. Again, will mercurials and our salts co-operate to a cure? Will half the necessary quantity of a mercurial, joined to half the necessary quantity of nitrous acid, or oxygenated muriate, give the same result as the full quantity of either? From a passage in Dr. Rutherford’s letter, there is room to surmise that they would. And so they ought, if their action be identical, or if they owe their virtue solely to oxygen. We have not, it is true, such accuracy in medicine as to halve necessary quantities or doses; but, in a number of cases a
difference

difference in the dose should be sensible, if the supposition is just.

‘ Unless it be true, that very diversified actions are capable of effecting a cure in syphilis, it would seem, from other facts, that no antisyphilitic remedy can owe its virtue to oxygen. The occasional efficacy of certain plants, as sarsaparilla with mezereon, the astragalus exscapus, &c. is strongly attested. But how can the decoction of a bitterish, sub-astringent root, such as that of the astragalus, be imagined capable of oxygenating the system? Nor indeed, have other plants, which have been so useful in syphilis, the sensible or chemical qualities of those substances that contain oxygen largely and loosely combined. I refer to these plants for the sake of illustration; and would by no means be understood to speak of them, as generally useful in venereal complaints. There are, I believe, but few constitutions in which any of the number will be found efficacious, even in the secondary stage of lues. But it seems sufficiently ascertained that there are some (e. g. see *Girtanner's Verner. Krankh. i. Murray App. Med. vi. 83.*) It is to be lamented, that a catalogue of these plants, accompanied with what evidence exists of their powers, is not made out. For however disagreeable medicinal drenches may be, nine patients in ten would swallow all the decoctions the surgeon can contrive, rather than endure the tortures of secondary syphilis. Our venders of quack medicines for venereal complaints, live, I suppose, chiefly upon these uncertain and neglected articles of the *materia medica*. Perhaps, however, their preparations are little else than sugared decoction of the woods. Be this as it may, single cures are proclaimed in advertisements, and probably hundreds of failures suppressed.

‘ A list of the substances, to the trial of which the principle of oxygenation leads, would be useless. In the ultimate medicinal results, differences will, no doubt, appear, which cannot be explained, from the degree

degree of combination of oxygen. Oxygenated muriate cures the venereal disorder. What will nitre do? It is curious that the citric and nitrous acids should both cure lues venerea; but neither sulphuric acid nor acid of tartar cure the scurvy. In such a manner does nature play fast and loose with analogies!

‘If the nitro-muriatic acid (*aqua regia*) be used at all, great caution should be observed in regard to the dose. The variety, prepared with muriate of ammonia, (sal ammoniac) may not answer, though the others should. Some particulars, at least, in the literary history of syphilis, favour this conjecture. Peyrilhe (*Remède nouveau, contre les maladies veneriennes. Paris, 1794*) having revived the use of volatile alkali, professor Adolphus Murray decisively shewed that the inflammation of chancres is increased by it, and that in other forms of the disorder, it is prejudicial. *Medit. circa methodum luis venereæ curandæ. Upsal, 1779.*

‘It is manifest, from all the facts taken together, that nitrous acid does not act like mercury upon the salivary glands. Delivering it by a tube low down in the mouth, is an experimentum crucis. In some cases, by stimulating the salivary orifices, it undoubtedly did occasion salivation. In a case of spasmodic asthma, mercury brought on deep ulcers of the tongue. I saw the same from the nitrous acid.

‘Most observers have noticed the great effect of nitrous acid in increasing the appetite. In the asthmatic case just mentioned, and in a variety of instances, from the autumn of 1796, to the present time, I have myself witnessed the fact. It has occurred in several delicate women with whom inappetency is a constitutional defect. In indigestion, attended by diminished secretion of bile, I have experienced the utility of the nitrous acid. It has been effectual after *tussis hepatica*, —that terrible disease of hard drinkers was fully formed. As a means of checking night sweats in consumption, it has shewn, in my practice, no superiority

riority over sulphuric acid. Its tendency to produce diarrhœa appeared equal.'

ART. XLII. CAROL. SAM. ANDERSCH, *Traciatio Anatomico-Physiologica de nervis Humani corporis aliquibus, quam edidit* ERNST. PHILIPP. ANDERSCH, *an Anatomico-Physiological Treatise on some of the Nerves of the Human Body, by* CHA. SAMUEL ANDERSCH, vol. I. octavo with two copper plates, Regioment, 1797. Imported by Booley, price

THE nerves treated of by the author are, the ninth nerve of the head, or *nervus sensorius linguæ*: the tenth nerve of the head, or *nervus harmonicus magnus capitis*: the eleventh nerve of the head, or *nervus motorius linguæ*: the external descending nerve of the neck, or *nervus musculos colli movens externus*: the internal descending nerve of the neck, or *nervus musculos colli movens internus*: the great nerve of the body, or *nervus magnus harmonicus corporis*: the cardiac nerves of the right side, or *nervi musculos cordis lateris dextri moventes*.

The great importance of a clear knowledge of the nervous system, in the practice of physic, is generally allowed, but the number of labourers in this department will not be found equal to its utility. Although minute investigations have been made by celebrated anatomists of the present century, yet much remains to be done on this subject. The intense application of the author of this work to his anatomical enquiries was the occasion of a distressing melancholy, from the effects of which he never recovered. It is to be lamented, that we are thus deprived of the labours of a very accurate and diligent examiner into this important part of the animal frame.

The two plates subjoined to the work are well and handsomely executed: the whole work is calculated

to throw considerable light on this part of the nervous system, and will make a very useful addition to the works of Haase, Haller, and Scarpa, on the same subject.

ART. XLIII. *Dissertation Hygienique, sur la Conservation des gens de mer, par Dr. ANDRE BACHERACHT, traduite, avec des notes, par Le Dr. DESBOUT, &c. A Hygienical Dissertation, upon the Preservation of Seamen, by Dr. BACHERACHT, translated, with notes, by Dr. DESBOUT, octavo, pages 150, St. Petersburg, 1791. Imported by Boosey, price*

THE safety of a ship is well known to be closely connected with the health of its crew ; consequently too great attention cannot be paid, to prevent, by salutary precautions, those disorders, to which men bred up to the sea are unavoidably exposed. It has been, generally, supposed, that the food was the principal cause of those disorders which prevail on ship-board ; this, however, is contradicted by experience ; for crews, consisting of a great number of men, have made several voyages of considerable length, without experiencing any manifest alteration in their state of health. The reiterated occurrence of this fact, is an incontestible proof, that sea provisions, when good, are by no means to be considered as the direct cause of disorders to which seamen are subject. The production of diseases, which frequently appear so suddenly and violently as to create the most serious apprehensions, is to be sought for from other sources, some of which relate immediately to the ship, others to the crew, and some may owe their origin to the climate or latitude the ship may chance to be in, or the port or harbour she may put into. As different

as these causes may be, so the remedy to be applied, must necessarily vary.

The most considerable among the accidental causes of diseases, which, for the most part, happen at sea, are, according to the author, the following:

1. The small space of the vessel.
2. The continual dampness of the air.
3. The air below being too confined.
4. Its being always more or less impregnated with exhalations from the body and substances on board.
5. The difficulty or impossibility of separating the sick from the rest of the crew, which greatly tends to spread contagious disorders.
6. The great difficulty there is on all occasions of attending to cleanliness.
7. The few resources there are for the regimen of the sick.

As of the utmost importance, the author considers,

1. The placing of too many seamen on board a vessel, the size of which is not proportioned to their number.
2. The greater part of the crew being composed of soldiers, or men unaccustomed to the sea.

The air, which is always too confined in a ship, is on that account very liable to corrupt; and this will encrease, to a very great degree, if the crew be not proportioned to the size of the vessel. Nor are the consequences to be apprehended, less destructive, if the crew be composed mostly of landsmen, who are unaccustomed to ship provisions, and not inured to the hardships of a sea-faring life.

The knowledge of these causes points out to us the means of prevention, as far as this can be effected.

The author, therefore, proceeds to lay down rules for the conduct of those who wish to avoid disease in such situations; and points out the best, and most effectual means, established by long experience, for the

F f preservation

preservation of the health of so essential a part of the community.

ART. XLIV. PAEDOTROPHIA; *or, the Art of Nursing Children. A Poem, in Three Books. Translated from the Latin of SCEVOLE DE ST. MARTHE; with medical and historical Notes; with the Life of the Author, from the French of Michel and Nicéron. By H. W. TYTLER, M.D. 3vo. 206 pages, price 7s. Debrett, &c. London, 1797.*

SCEVOLE DE ST. MARTHE was born in the year 1536, in the city of Loudon, in France. He was by nature a poet, but was bred to the study of the law. The origin of the present poem is thus accounted for in the life of the author which is prefixed. ‘An occurrence made him resolve to embrace again another excellent and rare subject; for one of his children being afflicted with severe distresses in the time of suckling, as he was a good father, he was not sparing of the experience and care of the best physicians: he applied himself likewise to search curiously the natures and constitutions of infants; and, as he had remarked many singularities, and penetrated, by the point and vivacity of his fine genius, even to the most concealed secrets of nature and philosophy, this made him undertake the Latin poem of the Pædotrophia, or the manner of nursing children at the breast, and of preserving these young and tender plants against an infinite number of storms and tempests, which menace, and often kill them even in the birth.’ ‘His researches had been so successful, that he cured his young son by remedies of his own prescribing, after he was given over by the physicians.’

Didactic poems, which profess to teach important doctrines in a style that might captivate the indolent, and

and those who require to be attracted by amusement to useful objects of study ; which profess, in a word, to blend the useful with the agreeable, have at all times met with numerous admirers. The present subject is as well calculated, perhaps, for this purpose, as many others, which have been so treated. But the age in which the *Pœdotrophia* was written, and the great and important changes which medical philosophy has undergone, since that period, are circumstances, which, in a great measure, detract from its present value ; and, at all events, render a minute investigation of it, *on our parts*, altogether unnecessary. It must not be concealed, however, that it once acquired and retained a high degree of notice and regard, both on account of the elegance of its construction, as a poem ; and on that of the plain and forcible manner, in which its precepts are delivered.

ART. XLV. *An Essay on the Abuse of Spirituous Liquors ; being an attempt to exhibit, in its genuine colours, its pernicious effects upon the property, health, and morals, of the people, with rules and admonitions respecting the prevention and cure of this great national evil.* By A. FOTHERGILL, M. D. 8vo. 23 pages, price 6s. Bath, 1796.

THIS little tract is intended for general use, and contains a judicious and forcible appeal to the understanding of all classes of men. It suffices for us to say, that the medical doctrines, which it contains, or the explanation that is given of the effects of this species of poison on the living body, are well adapted to the comprehension of the general reader.

ART. XLVI. *A few Remarks on the Nature and Cure of Colds*, By T. M. Kelson. Octavo, 36 pages, price 1s. 6d. Murray and Co. London, 1797.

THE first pages of this pamphlet are employed in combating the popular opinion, that the affection termed a cold, arises from suppressed perspiration. His next object is to prove, that cold and moisture have no share in the production of those various diseases which are usually attributed to them. His own particular theory is, that a cold is a disease *sui generis*, always depending upon the application of a specific matter. This matter he supposes to be permanently existing, as much as that producing small pox, or any other of a contagious nature: and when applied to those parts of the human body, liable to be affected by it, will become the cause of a distemper, infectious, in proportion to its virulence; which usually is so far regulated by the circumstances of season, constitution, &c. as either to appear in the trifling form of a sniveling cold; or even to induce it to take the formidable shape of influenza.

We apprehend the fact of cold being an exciting cause of catarrh, as well as of many other disorders, is too well established by common observation, to be shook by any argument here adduced against it. Mr. Nelson asserts, that colds are to be communicated. Were this, indeed, too evident, as he says, to admit of dispute, considerable probability would, no doubt, be afforded to his opinion: but we know not on what grounds this is assumed. It would seem to be contradicted by every day's experience.

Nothing new respecting the treatment is suggested by this new view of the disorder; unless it be, that Mr. Nelson would neutralize this supposed infectious matter, by the fumes of vinegar and other acids; conceiving it to be alkaline in its nature.

THE

MEDICAL and CHIRURGICAL
REVIEW.

MARCH, 1798.

ART. XLVII. *Medical Reports of the Effects of Water, Cold and Warm, as a Remedy in Fever and Febrile Diseases ; whether applied to the Surface of the Body, or used as a Drink : with Observations on the Nature of Fever ; and on the Effects of Opium, Alkohol, and Inanition. By JAMES CURRIE, M. D. Physician to the Liverpool Infirmary, &c. Octavo, 300 pages, price 6s. CADELL and DAVIES, London, 1797.*

THE general effects of heat and cold in the production of diseases appear to be much better ascertained and understood, than their particular operation towards the removal of them. The attention of practitioners has been too exclusively bestowed on the various drugs with which the materia medica is overwhelmed ; to the neglect of more simple, and generally more useful agents ; agents, whose utility is enhanced, from the circumstance of their being always at hand, and almost universally applicable. In the valuable collection which we are now to notice, this truth is amply illustrated, not only on the ground of rational argument, but on the more sure and steady basis of facts.

The state of the system, with regard to temperature, under disease, and the influence of heat and cold in their treatment, are rendered confused, and frequently unintelligible, from this circumstance ; that the accounts given of these matters, even by the most approved authors, are, with a few exceptions, founded, not on any exact measurement of heat, but on the sensations of the patient himself, or his attendants. To remedy these defects, therefore, Dr. Currie has endeavoured to ascertain the real temperature of the body in different circumstances of health and disease, by actual admeasurement with the thermometer.

The first chapter contains an account of the successful treatment of some cases of fever by the ablution of the patient with cold water, by Dr. William Wright. This account has been already before the public*.

Chap. 2. Contains the history of a fever which broke out in the Liverpool Infirmary, in the winter of 1787 : the disorder was of the low contagious kind, common in most parts of the island. In seven cases, affusion of cold water was employed, and they all did well. The same remedy afterwards succeeded in a very considerable number of cases.

Chap. 3. History of a fever which occurred in the 30th Regiment. The general guard-room had been used as a place of confinement for deserters ; it was extremely close and dirty, and under it was a cellar, which in the winter had been full of water. This water was now half evaporated, and from the surface issued offensive exhalations. In a dark, narrow, and unventilated cell, off the guard-room, it was usual to confine such men as were sent to the guard for misbehaviour ; and, amongst others, several had been sent on account of drunkenness, who were suffered to remain there 24 hours, under the debility that succeeds intoxication. The Typhus, or Jail Fever made its

* Mem. Med. Soc. Vol. III. p. 147.

appearance in two of these men, and soon spread amongst the corps with great rapidity. Sea water was poured over the naked bodies of those whose strength was not greatly reduced, and *whose heat was steadily above the temperature of health*. In those advanced in the fever, whose debility was of course great, the whole surface of the body was spunged with tepid vinegar.

The contagion still continuing to spread, the whole Regiment was drawn up and examined: seventeen were found with symptoms of fever upon them.—These were subjected to the cold affusion once, and sometimes twice a day. In fifteen of the number the contagion was extinguished. In the remaining two the fever went through its course. The healthy part of the Regiment bathed in the sea daily. By these means the contagion was at length destroyed. Of thirty-two that went through the disease, two died, and in these the cold affusion was not had recourse to.

The next chapter relates to the manner in which the affusion of cold water ought to be used in fever, (the low contagious fever) the rules which ought to govern its application, and the different effects to be expected from it, according to the different stages of the disease in which it is employed. All fevers having times of remission and exacerbation, the safest and most advantageous time for using the cold affusion, according to the author, is when the exacerbation is at its height, or immediately after its declination is begun. This is generally from six to nine o'clock in the evening; but it may be safely used, he observes, at any time of the day, *when there is no sense of chilliness present; when the heat of the surface is steadily above what is natural; and when there is no general or profuse perspiration*. The following are the author's particular remarks on this subject.

1. ' If the aspersions of cold water on the surface of the body be used during the cold stage of the paroxysm

of fever, the respiration is nearly suspended, the pulse becomes fluttering, feeble, and of an incalculable frequency; the surface and extremities become doubly cold and shrivelled, and the patient seems to struggle with the pangs of instant dissolution. I have no doubt from what I have observed, that in such circumstances, the repeated affusion of a few buckets of cold water would extinguish life. This remedy should therefore never be used when any considerable sense of chilliness is present, even though the thermometer, applied to the trunk of the body, should indicate a degree of heat greater than usual.

2. ' Neither ought it to be used when the heat measured by the thermometer is less than, or even only equal to the natural heat, though the patient should feel no degree of chilliness. This is sometimes the case towards the last stages of fever, when the powers of life are too weak to sustain or re-act under, so powerful a stimulus.

3. ' It is also necessary to abstain from the use of this remedy when the body is under profuse perspiration, and this caution is more important in proportion to the continuance of this perspiration. In the commencement of perspiration, especially if it has been brought on by violent exercise, the affusion of cold water on the naked body, or even immersion in the cold bath, may be hazarded with little risque, and sometimes may be resorted to with great benefit. After the perspiration has continued some time and flowed freely, especially if the body has remained at rest, either the affusion or immersion are attended with danger, even though the heat of the body at the moment of using them be greater than natural.—Perspiration is always a cooling process in itself, but in bed it is often prolonged by artificial means, and the body is prevented from cooling under it to the natural degree, by the load of heated clothes. When the heat has been thus artificially kept up, a practitioner, judging by the information of his thermometer only,

only, may be led into error. In this situation, however, I have observed that the heat sinks rapidly on the exposure of the surface of the body even to the external air, and that the application of cold water, either by affusion or immersion, is accompanied by a loss of heat and a deficiency of re-action, which are altogether inconsistent with safety.' Under these restrictions, the cold affusion may be used at any period of fever; but its effects will be more salutary in proportion as it is used more early.

Chap. 5. Contains a relation of cases in which the affusion of cold water was used in the different stages of fever.

Case 1. 'A nurse in the fever ward of the Infirmary having several patients under her care, caught the infection. She was seized with violent rigors, chilliness, and wandering pains, succeeded by great heat, thirst, and head-ach. Sixteen hours after the first attack, her heat at the axilla was 103° of Fahrenh. her pulse 112 in the minute and strong; her thirst great, her tongue furred, and her skin dry.

'Five gallons of salt water, of the temperature of 44° , were poured over her naked body, and after being hastily dried with towels, she was replaced in bed: when the agitation and sobbing had subsided, her pulse was found to beat at the rate of 96 strokes in the minute, and in half an hour afterwards it had fallen to 80. The heat was reduced to 98° by the ablution, and half an hour afterwards it remained stationary. The sense of heat and the head-ach were gone, and the thirst nearly gone. Six hours afterwards she was found perfectly free of fever, but a good deal of debility remained.

'Small doses of colombo were ordered for her with a light nourishing diet, and for several days the cold affusion was repeated at the same hour of the day; the fever never returned.' The author has seen a complete solution of the disease by these means, when employed so late as the third day.

The following case will point out the effects of this remedy when employed in a more advanced stage. ' F. G. a soldier of the 30th regiment, aged 33, fell under my care on the 9th of June, 1792, during the prevalence of the epidemic in that regiment, of which I have already given an account. He was in the 9th day of the disease—his pulse 100 and feeble—his heat 104° —his thirst was very great—his tongue foul and black—frequent cough occurred, with streaks of blood in the expectoration—and petechiæ appeared all over his body. His mind was at all times confused, and occasionally completely delirious. I directed that his strength should be supported by administering a bottle of wine every day, with an equal quantity of gruel;—that every night he should take an opiate draught, and that a complete operation of his bowels should be procured by a clyster administered daily, and if this did not succeed, by a few grains of calomel. I also directed that a bucket full of salt-water should be thrown over him immediately, and repeated according to circumstances. In a few minutes after the affusion, the heat was 98° —the pulse 98—his mind was more calm and collected: two hours afterwards he had relapsed into nearly his former state, but the night was passed more tranquilly. The whole of this practice was continued, with nearly the same result, till the 12th day of the disease, the affusion having always been performed in the evening, and occasionally at noon. The fever continued its usual period, but on the 12th day, the heat having sunk to its natural standard, the cold affusion was thenceforth omitted; we however, spunged the whole body once or twice a day with vinegar.—The patient was in a state of convalescence on the 18th day from the first attack.

The cold affusion has likewise been repeatedly employed with success in intermittents.

Chap. 6. Contains general observations. Though the patients were often startled at the first proposal of dashing the cold water over them, yet after one trial, there

there was seldom any difficulty in persuading them to have it repeated. The effects were in general highly grateful and refreshing to their sensations, the extinction or abatement of fever was commonly followed by more or less diaphoresis, and this again by refreshing sleep. The author employed fresh water, fresh water mixed with vinegar, sea water, and brine. The effects of these do not seem to have been materially different.

Chap. 9. *Precautions requisite in using the cold affusion, illustrated by cases.* ‘ In recommending the affusion of cold water as a remedy in fever, an express exception is therefore made against its use during the feverish chill, or after the perspiration has begun to flow profusely, and more especially after it has continued to flow profusely for some time. An exception is also made against its being employed in the latter end of fever, when the strength is much exhausted, and the heat is sometimes as low or lower than the temperature of health. While, however, the heat rises one or two degrees above the healthy standard, this remedy may be used even in the latter stages of fever. I have employed it with advantage on the 11th, 12th, and 13th days. In instances of this kind it will however be prudent to make the degree of cold very moderate, as has been already observed; and as it is scarcely to be expected that at an advanced period of the disease the progress of it can be stopped, or its duration much lessened, it may perhaps answer every purpose to employ in such cases the *tepid* ablution. I have indeed often contented myself with spunging the body all over with tepid vinegar, or vinegar and water, from the 9th or 10th day forwards; but I have frequently in cases where the heat continued high, directed the general affusion of tepid water, by which the heat may always be speedily and effectually reduced, *when that is the only object in view.*’

Chap. 10, Contains general remarks on fever. There is a species, of fever which the author has sometimes met with, differing considerably from Typhus, or the inflammatory fever, and which he thinks, is not reducible to any nosological class. It would be difficult for us to give a correct idea of the disease alluded to by Dr. Currie without transcribing his description of it, at length. It is chiefly characterized, by catarrhal symptoms in the beginning, and an unusual acuteness in all the senses. It was not relieved by the cold affusion; nor has it yielded, by the author's trials, to any of the common methods of treatment.

Chap. 9. *Of the use of the affusion of cold and tepid water in small-pox, with cases.* In situations where the eruptive fever of small-pox is clearly distinguishable, and where it does not abate sufficiently on the admission of cold air, the affusion of cold water, the author thinks, may be resorted to with confidence and safety, regulated, as in other cases, by the actual state of the patients heat, and of his sensation of heat. In the early stages of the eruption in the distinct kind, it has been employed with success. Some trials of it in the confluent were unfavourable.

From several experiments of Dr. Gerard, it appears, that the affusion of cold water, extinguishes the incipient Scarlatina as well as the Typhus. After the efflorescence appears on the surface, the author has, for the last fifteen months, uniformly prescribed immersion in the tepid bath, (from 92° to 96°) and with striking benefit.

In the 10th Chapter the author treats of the affusion of tepid water in feverish disorders, and of sponging the body with water or vinegar. The degrees of heat included under the denomination *tepid*, extend from the 87° to the 97° of Fahrenheit. The author has found the tepid affusion in many cases lower the temperature of the body as much or more than the cold; and hence its use in cases where the heat of the
body

body does not exceed the natural, is found to be hurtful. This is accounted for from the speedier evaporation of warm than of cold water; and likewise, from the want of the stimulus which the cold affusion affords to the system. The author, therefore, has very generally employed the tepid affusion in those cases of feverish affection where the principal object is to diminish heat; where the morbid actions are weakly catenated, depending rather on the stimulus of preternatural heat, than on contagion, miasmata, the morbid contents of the stomach and bowels, or local inflammatory affection. Of this kind are a great part of the feverish affections of children. Dr. Currie has likewise employed it in feverish disorders of various kinds where the lungs are oppressed, and the respiration laborious, which would not bear the sudden stimulus of the cold affusion.

Chap. 11. Of the use of cold water as a drink in fever. The free use of cold drinks in fever has obtained in various times, and in different places, and is doubtless founded on observation and experience.—This practice has, however, gone much into disuse, occasioned, the author justly remarks, by an attachment to frivolous or unfounded theories. It is applicable, he remarks, in the same cases, and on the same general principles as the cold affusion. It may be used, in a word, at any time, when there is no sense of chilliness present, when the heat of the surface is steadily above what is natural, and when there is no general or profuse perspiration.

Chap. 12. Treats of the disorder that arises from drinking cold liquids after severe exercise. Fatal consequences have frequently arisen from the above practice, several instances of which are here adduced from the author's experience, and that of others. It is, however, in certain circumstances only, he thinks, that this danger arises. When the system has been much heated and enfeebled by severe exertions, is losing its preternatural heat from profuse perspiration,
and

and in general also from the cessation of the exertions by which this heat was originally produced ; if, under these circumstances, a sudden application of cold is made either to the stomach or the surface, the living power will resist it faintly, and fatal consequences often ensue. On the contrary, where the body is preternaturally heated, and at the same time is not in a state of parting with it rapidly, where also it is sustained by continued exertion, the sudden application of cold in any form is safe. The injury, therefore, does not arise from going into the cold-bath, or drinking cold liquids, *when hot*, but from using these, *when cooling, after having been heated*.

Chap. 13. Treats of the use of the cold-bath in convulsive diseases, and in insanity. On these subjects, the author remarks, that he has seen three cases of tetanus from wounds, in which the cold affusion was unsuccessfully employed. In another it was successful, conjoined, however, with a liberal use of wine and opium. He has used the cold-bath in various instances of epilepsy during the paroxysm, but in general without the patient being roused to consciousness or sensation, and without advantage. An interesting case of insanity next follows, detailed with great accuracy and minuteness. Opium, digitalis, and the warm-bath were all assiduously employed, but without manifest advantage. Recourse was then had to cold immersion during the most furious state of the patient. He came out of the bath calm, and nearly rational, and this interval of reason continued for 24 hours. A second application of this remedy removed the insanity completely, and it did not afterwards recur.

In the 14th chapter the author gives a general view of the doctrines respecting fever, which have prevailed from the time of Hippocrates to the present, and concludes with his own ideas on this important and difficult subject. ‘ The first symptom of the disease, is a sense of debility or languor, very distinctly marked
on

on the countenance, followed by paleness, cold and tremor; the functions of the mind are weakened in a correspondent degree with those of the body, and all the actions of the system are enfeebled. This general debility is peculiar in its kind. The symptoms resemble those produced by inhaling certain gases whose properties are known; and this circumstance serves to strengthen those views of the nature of contagion which the new chemistry has suggested. They seem also to have a resemblance, though a more remote one, to the effects of certain poisons operating on the stomach, or introduced into the circulation by the absorbents. The remote cause of fever may be considered as itself a poison acting directly on the sensorium commune. Where this poison is peculiarly concentrated and malignant, or where the system is much debilitated, the powers of life are sometimes oppressed and extinguished in the first stage of the disease. In general however, a re-action or resistance commences; the heart and lungs are roused into increased exertion by the pressure of the accumulating fluids, and strive as it were, to repel them back on the surface and extremities; while a spasmodic, or morbid stricture of the extreme vessels opposes the reflux of the fluids, and thus maintaining the inordinate pressure on the centre, excites the heart, arteries, and lungs, to still more violent exertions. In this contest the stomach is usually brought into sympathy, and nausea and vomiting are often induced.

‘ This constitutes what appears to be a struggle between the living energy, and the morbid cause—between the power of the centre, and the resistance of the extreme vessels—in the course of which a degree of preternatural heat is generated, and the phenomena of the hot stage are produced. When the powers of life prevail, the stricture on the extreme vessels, and on the exhalents of the skin, at length gives way, and a profuse perspiration being poured out on the surface, the heat is carried off, and the
febrile

febrile symptoms subside. Without entering into detail, this may be considered as a general view of the single paroxysm. It often however occurs, that the solution of the spasm on the extreme vessels does not take place, or is incomplete, and that the morbid heat is not carried off. In this case the morbid actions go on, and the disease runs into continued fever. For some time the spasm on the extreme vessels remains, and the heat is præternaturally great; but these symptoms do not continue through the whole course of the disease. On the contrary, the heat towards the latter stages, will sometimes be found as low as the natural standard, sometimes lower, and the capillaries of the skin be completely relaxed; while the inordinate action of the heart and arteries continues, being carried on by the diseased association produced in the course of the disease, which retains its influence in this as in other cases, after the cause that produced it ceases to operate.

‘ To this general view of fever, it is probable that little objection will be offered, by those who are familiar with the disease. But exceptions may be taken to the language as not sufficiently clear of theory, against which the author had declared. It may be said, for instance, that in applying the active forms of speech to the re-action or resistance of the constitution, we seem to run into the Stahlian doctrine, or at least to assume the existence of the *vis medicatrix naturæ* of Dr. Cullen; and that to enumerate spasm as a link in the chain of fever, is in fact to admit the leading peculiarity of his system. To this it may be replied, that there is no subject on which the imperfection of language is so much perceived, as in our attempts to describe the phenomena of life. In the strictness of speech we properly employ the passive mood of our verbs, in recording the phenomena of inanimate matter, and confine the active mood to those vital motions, which are accompanied with consciousness and design. But there are various actions peculiar to life, which
are

are not accompanied by consciousness, or subject to the will, and which depend on laws wholly distinct from those which regulate inanimate matter. If we borrow the phraseology and the *mood* in which we speak of inanimate matter in recording these actions, we are apt not only to form indistinct conceptions of their nature, but to apply the principles which regulate inanimate motions to the motions of life. This is an obvious, and as experience teaches us, an ample source of error. If, on the other hand, we employ the active forms of speech, these immediately suggest consciousness and design, and the imagination forms to itself an ideal being, as directing these actions, in whom consciousness and design may reside. This also is a natural and fruitful source of error. Both these extremes we would avoid. But the penury of language obliges us to use one or the other mood in treating of the phenomena in question, and on reflection it appears, that in our present ignorance of the first principles of life, a clearer notion will be formed of the nature of those motions in which the whole system sympathizes, destitute though they be of consciousness and design, by the occasional use of the active forms of speech, since they have a much stricter analogy with those vital actions, to which these forms are justly applicable, than with the motions of inanimate matter. Considerations of this kind may have influenced the late John Hunter in the use of his terms, which are chiefly *active*, and which, though far from perfect in themselves, are more happy than those of former physiologists, as his views of organic life were more original, more unprejudiced, and in general more accurate and profound.

‘ *Debility of a peculiar kind, is then the first operation of the poison producing fever—the necessary consequence, or as some contend, the concomitant effect, is a spasm, or contraction of the arteries; but more especially of the extreme vessels, and the capillaries of the surface—hence follows an accumulation of blood*
on

on the heart and lungs—the re-action of those organs—the generation of morbid heat—and of morbid association.’ On each of these links in the chain of fever, the author offers some remarks.

It is impossible for us to follow him in all his illustrations ; for these we refer our readers to the work itself. That there is a peculiar condition of the extreme vessels, different from simple debility, we think is amply proved. To this Dr. Cullen not unaptly applied the epithet of spasm. This spasm which later physiologists have wholly neglected, is perhaps the most important peculiarity of the disease. It is on this that the cold affusion chiefly operates ; and the mode of its operation is supposed to be as follows : the sudden, general, and powerful stimulus given to the system, dissolves the spasm on the extreme vessels of the surface, and of the various cavities of the body : the sudden and general evaporation carries off a large portion of the morbid heat accumulated under the skin : and the healthy action of the capillaries and exhalents being restored, the remaining superfluous heat passes off by sensible and insensible perspiration. The stimulus of morbid heat and of morbid stricture being removed, the inordinate action of the heart and arteries subsides, and the harassed and toil-worn patient sinks into that peaceful sleep, which nature has provided as the solace of our pains and sorrows, and the restorer of our strength.

‘ What then, he asks, ought to be the indications of practice in fever ? To diminish the cold in the cold stage ; to moderate the heat in the hot stage ; and to resolve the stricture on the extreme vessels by which the heat is retained, and the re-action prolonged ; and where the inordinate action of the vascular system continues after these objects have been attained, to support the powers of life till the morbid associations, or habits of action, gradually die away, from the removal of the causes by which they were introduced. In addition to these general indications, it will be essential

essential to secure the proper action of the bowels ; and in every case to unload the alimentary canal of its morbid contents ; whether these contents have become diseased through the action of general fever, or, as there is reason to believe in some of the fevers of the warm climates, by the remote cause by which fever is produced.

‘ If these general observations should excite attention, they will doubtless excite objections also, and perhaps animadversions ; but whatever be the fate of his reasonings, the author rests with some confidence on the stability of the facts by which they have been suggested. In the view which he has taken of fever, the supposed intentions of nature are not inquired into ; and of course no attempt is made to arrange the symptoms as they arise from the direct agency of the febrile poison, or the exertion of *her* medicating power. Such attempts are as unnecessary as they are difficult. It is not indeed to be denied, that the living system, after being excited into morbid action, passes frequently, unassisted, through a succession of symptoms into a state of health ; differing in this as in every other respect, from any of the arrangements of unorganized matter. But it is equally true that it often sinks in the course of this process, sometimes destroyed in fever by the excess of its own re-action, and sometimes by the habits of action, or associations produced in the course of the disease,

‘ It is a serious error to suppose that the febrile poison, being received into the system, is the principal cause of the symptoms, and that they consist of a struggle of nature to expel it, without which health cannot be restored. It is safer to consider the febrile poison as an agent that excites the system into fever, which however is carried on, not by the continued presence and agency of this poison, but by the principles which regulate the actions of life. We are not therefore to wait for the sanative process, by which nature is supposed to separate this *virus* and to throw it off, watch-
ing

ing her motions, and assisting her purposes; but to oppose the fever in every stage of its progress with all our skill, and to bring it to as speedy a termination as is in our power. When we dispel the morbid heat, and reduce morbid re-action in the hot stage of the original paroxysm, by the powerful means of the cold affusion, the whole of the febrile symptoms vanish; a sufficient proof that in this stage of the disease these symptoms arose from inordinate heat and inordinate action, and not from a poison circulating with the blood. Hence the safety and the wisdom of decisive measures in the earlier stages, before the strength is materially impaired, or the diseased habits established.

The chapter concludes with a recommendation of the cold-bath and cold drinks, in the fever of the West Indies, and in the plague.

Several important observations afterwards occur on the subject of other remedies in fever: these we shall notice in a future number.

ART. XLVIII. *An Essay concerning the Outward and Salutory Application of Oils on the Human Body.*

By the Rev. WILLIAM MARTIN TRINDER, M. D. Octavo, 31 pages. LONGMAN, London, 1797.

A PART of this pamphlet is employed in arguing the propriety of blending the medical with the clerical profession. Against the occasional practice of this, we have nothing to offer; nor have we any thing to urge against it in the author's particular case.—Yet it may certainly be observed in general, that the study of medicine, in theory and practice, is altogether sufficient to occupy the labours of the most industrious. The present performance will, we fear, afford but a weak argument in favour of the author's proposal.

But

But of this we will enable our readers to judge for themselves.

The author in the first place notices the great use made by the ancients of the practice of inunction, both for the preservation of health and strength, and likewise as an article of luxury ; all of which he applauds and endeavours to justify on rational principles.

Frictions, he observes, moves and attenuates the otherwise immeable juices in the vessels that encumber and relax the nervous system. Oil, whether contained in the cellular membrane of the body, or externally applied, greatly, by its lubricity, facilitates muscular motion, &c.

‘ The fibres of old people are hard and rigid, their perspiration is little, and that bland vapour which formerly bedewed their bodies is no more ; inunction, with friction to them, is most salutary ; for the animal warmth and juices are hereby drawn into the skin, and the oil, by its nourishing powers, renovates and invigorates the whole system. The sagacious Sydenham had great success in the recovery of debilitated nature, by recommending healthy young men as bed-fellows to the aged and infirm ; he said, that heat alone was not the cause of restoration, for the application of warm napkins did no good, (sec. i. cap. iv. p. 79) it was therefore only to be ascribed to the mild oleaginous effluvia. Now, if the human oleaginous effluvia be so penetrating and balsamic as to afford revivifying nourishment by absorption, why should not the oil of sweet-almonds, for instance, do the same thing, especially when broke down and pressed in, by heat and friction.

‘ A nervous unhappiness, with susceptibility of cold is often occasioned by a thick cacochymy of humours, not at all inflammatory ; in this case, after proper evacuations, it is proper to draw the juices to the surface of the body by light frictions with the aromata, so indeed as to promote the due circulation of the blood, but not by violent application to encum-

ber the heart and lungs by the reflux of these thick and foul humours, &c.

‘ When the blood is too concrete, having lost its proper fluidity, it forms the melancholic temperament, &c.

‘ Phlegmatic persons of irritable habits of body (whose circulation is weak, the blood not being sent in sufficient force to the surface, so as in a due degree, to promote perspiration, and who by their inhalents, absorb more moisture from the atmosphere than stronger people), should perseveringly use friction, if not oil; they should also pay particular attention to diet.— They should avoid sugar and butter, which, by thickening the juices, impedes the circulation. Instead of eating glary food, as pig-meat and fatted calf, they should be contented with a more drying and attenuating diet, which would prevent alarming portions of lymph from collecting in the lungs, or in the joints. True indeed it is, that although a person be charged with too much lymph he may continue in health; but how long these defluxions may remain benign and unhurtful, no one can say; for also true it is, that, by the adverse diameters of a very few vessels, the juices may soon become stagnant and banefully acrimonious. The too abundant lymph should be discharged by drastic purges, at long intervals, and for diet, such as strengthens the elasticity of the fibres, should be recommended.’

After these specimens, it was hardly necessary for the author to inform us, that he took his degrees in medicine at the University of Leyden; not long posterior, we should suppose, to the time of the great Boerhaave; for no ray of modern light illumines the present performance.

‘ If it be said,’ the author remarks, ‘ that the clergy would not be so competent in the healing art as the faculty, I will ask, why not? They have the same advantages at Oxford and Cambridge, where
‘ there

‘ there are hospitals, as other medical students!—
 ‘ And if degrees in physic are thought to be particu-
 ‘ larly honourable from Oxford and Cambridge, sure-
 ‘ ly the competency ought not to be disputed!’—
 Surely not! for are not academical honours, com-
 petency, and merit, synonymous?

ART. XLIX. *A Practical Synopsis of the Materia Alimentaria and Materia Medica.* By the Author of the *Thesaurus Medicaminum*. Vol. 1, Octavo 304 pages, price 5s. BALDWIN, London, 1797.

THERE are not wanting treatises on the materia medica, which embrace almost every thing relating to that subject and to the materia alimentaria. The ample treatises of Lewis, Donald Monro, and especially the justly-celebrated one of Dr. Cullen, are deservedly in high estimation amongst practitioners. Let us inquire into the authors motives for the present undertaking. ‘ By far the greatest portion, he observes, of *Lewis’s* experimental history of the materia medica, and of *Monro’s* treatise on medical chymistry, consists of details of pharmaceutical operations and chemical analyses, and histories of the sensible and chemical properties of the different substances used in medicine. These inquiries, it must be allowed, are of great value and no person who is unacquainted with them, can be said to be duly qualified to undertake the cure of diseases. They belong properly to such elementary treatises; but these from their very nature, cannot be equally explicit upon practical points. Besides, the arrangement adopted in these treatises, is calculated rather for the use of the student, than of the practitioner.

‘ *Cullen’s* great work—that work which exhibits, in almost every page, the strongest proofs of the experienced practitioner as well as of the man of science—comes nearest to the plan we propose. Our arrange-

ment is for the most part his ; and his method of treating each subject, with a reference to its employment in the cure of diseases, we have followed. If his book had not been swelled out to so great a bulk, by the frequent introduction of physiological and pathological disquisitions ; and if, moreover, it had been published subsequently to the new-modelling of the London and Edinburgh pharmacopœias, there would have been little occasion for the present Synopsis. But these changes have made his materia medica, as well as *Lewis's*, less useful. It is true, that Dr. *Monro's* treatise comprises the whole of the new pharmacopœia of the London college ; but the Edinburgh college did not publish their new dispensatory till two or three years after his book was printed ; consequently it contains none of their alterations and improvements. It appears, therefore, that there was sufficient room for a new treatise on the materia medica, on a compendious scale, drawn up conformably with the changes that have taken place in the british pharmacopœias, and giving an account of the latest additions and improvements that have been made in this branch of medical science. On such a plan is the present Synopsis ; in the composition of which, although occasional use has been made of the larger works already mentioned, as well as of many others on the same subject ; yet let it not be supposed, that it is nothing but an abridgement of any, or all of them. The Author hopes that the great number of observations drawn from his own experience, together with the general execution of the plan, will raise his performance above the rank assigned to mere compilations.

‘ In treating of each article, the following method has been pursued. Supposing it to be a vegetable, the generic and trivial names of *Linnaeus* are first given ; then the class and order to which it belongs in the sexual system ; then the natural order, as improved by *Murray* in his *Apparatus Medicaminum* ; then the country of which it is a native ; then the officinal

ficinal name, and the part or parts used in medicine; then the english name; then its action upon the human body; the diseases in which it is serviceable: the doses and forms in which it is prescribed; the auxiliaries with which it is joined; the preparations and compositions directed to be made from it in the London and Edinburgh pharmacopœias, with the relative proportions of the other ingredients in those compositions; the doses of such preparations and compositions; and, lastly, references to authors of celebrity, who have written upon the subject under consideration.'

Such is the general nature of the work: whether the reasons which induced the author to undertake it are of sufficient weight, we shall not take upon us to determine. We may, however, remark, that its value would not have been diminished, had the virtues attributed to many of the articles been assigned on less equivocal grounds. The first volume contains all that relates to the materia alimentaria, and the first class of the materia medica, the *Evacuantia*. To enable our readers to judge of the execution of the work, we shall select a few specimens, and, in preference, such, as have not found a place in the elaborate treatise of Dr. Cullen.

‘ *KALI sulphuratum*. (Hepar sulphuris vulgare). Sulphurated kali. Common liver of sulphur, has been already noticed at p. 170. To what is there said we shall now add, that we have found it useful not only in the disorders there mentioned, but also in arthritic and rheumatic cases, in doses of two or three grains made into pills with soap, and repeated every third or fourth hour, with a draught of camphor-mixture, pepper-mint water, or ginger tea. We have moreover prescribed it with advantage in larger doses, combined with extract of cicuta, in a case of cancer. The cicuta had been given by itself for some weeks before, and had almost ceased, even in large quantities to produce any effect; but on combining the sulphurated

kali with it in doses of five grains, the patient experienced considerable relief. This will induce us to have recourse to it again in other instances of this dreadful disease ; and we recommend it to others.— Pure sulphur possesses, as before mentioned, a power of counteracting the effects of quicksilver and other metallic substances, on the human body ; but this power is much greater in the kali sulphuratum.— Hence the use of this preparation in salivations brought on by the abuse of mercury, and in the disorders occasioned by lead, arsenick, &c. (*Navier contre-poisons de l'arsenic, du sublimé corrosif et du plomb. 1777*). The combination of sulphur with the volatile alkali, which we shall call

‘ *AMMONIA sulphurata*. (*Hepar sulphuris volatile. Spiritus fumans Boylei. Spiritus fumans sulphuratus Beguini. Tinctura sulphuris volatilis*) sulphurated ammonia, volatile liver of sulphur, *Boyle's* smoking spirit, *Beguini's* smoking spirit of sulphur, volatile tincture of sulphur is made in various ways. The simplest method is to digest, without heat, one part flowers of sulphur with five parts water of pure ammonia. In this way, however, the sulphur is dissolved very slowly and very sparingly. A much stronger hepar is obtained by distilling together one part sulphur, an equal quantity of sal ammoniac, and 1 part 1-5th of quick-lime, (*Boyle Experiments on Colours, 1675*) or from one part flowers of sulphur, two parts sal ammoniac, and three parts quicklime, (*Hoffman Observationes Physico-chemicæ, 1736*) or, according to others, six parts quicklime to the last-mentioned proportions of the other materials. In *Fourcroy's Chemistry*, the following proportions are given:— Quicklime and sal ammoniac, equal quantities, and half as much sulphur. In all these distillations, a little distilled water is put into the retort along with the materials. In these processes, the muriatic acid of the sal ammoniac seizes the quicklime and lets go the volatile alkali, which rises up along with the sulphur,

uuites

unites with it, and passes over so combined into the receiver. This sulphurated ammonia is always in a liquid state. It possesses the same general properties as the sulphurated kali, and may be given in the same cases. It is proper, however, to notice, that it has a much stronger and more immediate effect upon the human body than the common hepar, and therefore requires more caution in the use of it. From two to five drops make a sufficient dose for grown up persons. For general remarks on sulphur the reader may consult *Detharding de Sulphure præstantissimo bezoardico*, 1746. *Reisig de Sulphuris Ufu interno*, 1768, and reprinted in *Baldinger's Sylloge*. On the external use of sulphur, see *Heteroclites*.

‘ Like the common hepar sulphuris, the *Sulphureous Waters* of Keddlestone, in Derbyshire, of Rippon and Harrowgate, in Yorkshire, of Sutton Bog, in Oxfordshire, of Moffatt, in Scotland, &c. when taken in the small quantity of a quarter of a pint once or twice a day, promote perspiration and urine; and hence are serviceable in diseases of the skin. In larger doses they are purgative.

‘ *COLCHICUM autumnale*. Hexandria. Trigynia. Liliaceæ. Indigenous. (Radix). Meadow Saffron. Has been given with good effect in humoural asthmas. (*Storck*). The *Oxymel Colchici*, Ph. Lond. is made by steeping an ounce of the sliced root in a pint of vinegar, and afterwards adding to the liquor filtered and expressed from the root, two pounds of honey and boiling the whole to a proper thickness. Dose, one or two drams. The *Syrupus Colchici*, Ph. Ed. is made by macerating the root in vinegar, in the same proportions, and afterwards adding to the filtered liquor twenty-six ounces of sugar, and boiling it to the consistence of a syrup. It may be given in the same quantities as the oxymel. As the active particles of the colchicum are of a volatile nature, the boiling in both these preparations should, if possible, be avoided. They must always vary in strength according to the

Hh 4

greater

greater or less degree of coction. It is owing to this circumstance, or to a variation of activity in the root, from a difference of soil and situation, that the results of the trials with it have been so different in different hands? That it naturally possesses great acrimony, we have incontestible proof; hence considerable caution is necessary in using it. At first, the dose may be a dram of the oxymel or syrup, taken in an ounce or two of some aromatic water, twice or thrice a day. After a little time, the quantity may be doubled, tripled, or quadrupled, according to its effects. As the dose is increased, the intervals between the repetitions should be lengthened, as large doses have sometimes a very sedative effect. After all, from the experience we have had of it, we are induced to think it inferior, both as an expectorant and diuretic, to the squill, and therefore set it aside as superfluous. *Storck Libellus de Colchici autumnalis radice*, 1763. *Ehrmann de Colchico autumnali*, 1772, and afterwards reprinted in *Baldinger's Sylloge Opusculorum argumenti Medico-Practici*. Vol. V.

‘ *ASTRAGALUS exscapus*. Diadelphia. Decandria. Papilionaceæ. Some parts of Germany, and in Hungary. (Radix). Stemless Milk vetch. Within these few years, a decoction of the root of this plant has been cried up as a specific against the venereal disease. Some direct half an ounce of the dried root, cut into small pieces, to be boiled in fifteen ounces of water down to twelve ounces. This quantity is drunk warm morning and evening. Others boil the same quantity of root in sixteen ounces of water down to eight ounces, to be taken in the same manner. Its principal operation is by the skin. Sometimes it excites a flow of urine. Like many other vegetables that promote the exhalation from the surface of the body, it has been found serviceable in cases of confirmed syphilis; but notwithstanding all the recommendations of the Hungarian professor *Winterl*, and the favourable accounts of the trials of it at the Vienna,

enna Hospital, under *Quarin* and others, we do not think that British practitioners will, in venereal cases, be induced to substitute it in place of other substances, whose powers in counteracting, expelling, and destroying the syphilitic virus, are much greater and more certain. Better success may be expected from it in arthritic and rheumatic affections; but even in these disorders, the experience that has hitherto been had of it, is not sufficient to entitle it to be preferred to other diaphoretic vegetables of longer standing and more note. In its general effects, it concides with the guaiacum-shavings and mezereum root; and though it may be equal, it does not appear to be superior to them. On the whole, therefore, we are inclined to consider it as a superfluous addition to the materia medica. *Quarin* Animadversiones practicæ, 1786. *Endter* de Astragalo exscapo, 1789. *Wegerich* de Astragali exscapi radice, 1789. *Crichton* in the ninth volume of the London Medical Journal. *Tietz*, de Virtute Astragali exscapi antivenereâ, 1790. For the observations of *Werner* and *Carminati* on this plant, the reader is referred to the 6th volume of *Murray's* Apparatus.'

ART. L. GERARDI VROLICK *Dissertatio Medico-botanica, sistens Observationes de Defoliatione Plantarum, &c. &c.* A Medico-botanical Dissertation, containing Observations on the Fall of the Leaves of Vegetables, and on the Powers of Plants, deduced from Botanical principles. By GERARD VROLICK, M. D. Leyden, 1796.

IN the very curious and ingenious dissertation before us, the author first examines and refutes the different theories which have been adopted for the explanation of the phenomenon in question. These we shall pass over, for it would be waste of time to detail
detail

detail hypotheses which have been successfully overturned. M. Vrolick, then endeavours to account for the falling of the leaves of vegetables on the following principles. In the first place, he observes, that the leaves possess a kind of life peculiar to themselves, and in which different periods may be remarked, altho' it has a connexion with the life of the individual, on which indeed it is dependent. At the period of undergoing this change, he remarks, the leaves fall and die of old age, but the life of the parent plant still subsists. 2nd. The dead leaves are detached from the boughs according to the same laws, by which the separation of dead animal matter from the living takes place; that is by the absorption of the extreme living parts.

In proof of the first position, the author observes, that we find in animated beings, as well as in vegetables, many parts which are endowed with a life proper and peculiar to them. For example, the foetus which proceeds from the eggs of the frog, and which is furnished on the sides of the head with the organs of respiration, analogous to the gills of fishes. These organs soon harden; they die, and become detached, whilst the animal is still far from having attained its perfect state. The horns of the stag, which are renewed every spring, run through, in the space of a single year, all the periods of a life which is proper to them, altho' many years are necessary for the animal to fulfil the periods of its duration.

The author next cites numerous examples from vegetable organized bodies. At the time when the pith of trees begins to disappear, the other organs of the vegetable increase, develop themselves, and enjoy a perfect life; at the time that the most central layers of the wood become so hardened, as no longer to permit the juices derived from the root, to circulate in their vessels, the external layers are in all the vigour of youth, and receive the juices abundantly: the seminal leaves, formed by the lobes of the seed, are in a state of decrepitude at the moment when the
plant

plant commences the period of its infancy. Flowers which run thro' the different periods of their life with such rapidity, have also an existence peculiar to them. Can we be surprized, therefore, that leaves live not beyond a year, and some not beyond a few months, altho' the individuals which bear them, exist, often, above an age? moreover, Mr. Vrolick observes, that the periods of the life of every organized body are marked by phenomena, which are proper to it. In infancy, it is soft and succulent; the fluids are more abundant than the solids; the fibres, tender and feeble, are more sensible, more irritable, and receive more easily the impression of the different stimuli which operate on them; the movement of their fluids is more rapid, and the secretions more abundant. In the latter period, which is that of decrepitude, the contrary phenomena are observable. The machine of the individual becomes hardened and dry, the solids increase, the cavities or vessels are straitened, and the fluids diminish in consequence; the fibres more inflexible receive with difficulty the impression of stimuli, the humours scarcely circulate; the secretions are slowly performed; in a word, all the functions are imperfectly performed, and soon they cease altogether. These phenomena are applied by the author to the leaves, and he hence concludes, that their death precedes their fall, of which it is the real cause. He passes afterwards to the second proposition, and inquires by what means the leaves become separated from the living part which survives them.

The cause of the separation of the leaves, M. Vrolick observes, is not a mechanical effect; it depends so much on the functions of the living individual, that if this dies, the separation does not take place. Let a tree be struck with lightning, the vital principle is annihilated in every part; nevertheless its leaves, although dead, adhere to the trunk and branches. If we examine the insertion of a leaf on the branch, we may perceive that it detaches itself from the outermost

most layer of the trunk. Numerous fascicles of ligneous fibres, after having traversed obliquely the cortical layers, prolong themselves according to the length of the footstalk; the epidermis covers the external surface of all the parts, and thus forms a continued whole; but this continuity ceases at the approach of the fall of the leaf, and it is indicated commonly at the point where the separation is about to take place, by a circular coloured line, as may be seen in the leaves of the *Aesculus*, *Aralia*, *Spinosa*, &c. The leaves then adhere no longer with the branches, but by the fascicles of ligneous fibres, which are soon thrown off by the absorption of a layer between the footstalk and the branch. This phenomenon, which is equally remarkable in the parts of organized animated matter, which are separated in consequence of sphacelus from the other living members, furnishes a new proof of the analogy which exists between vegetables and animals. The author terminates this first part in concluding, that the fall of the leaf is occasioned by its death, and that its separation is brought about by the absorption of a layer situated between the footstalk and the trunk or branch.

In a second dissertation, M. Vrolik enquires, whether the principles of botany lead to a knowledge of the virtues of plants; he observes, that some authors who have treated this subject, appear to attribute too much to botany, whilst others have confined within too narrow bounds the advantages to be derived from it. He does not allude here to those pretended botanical physicians named by Linnæus *Signatores*, because they imagine that the virtues of plants depend on the resemblance between the part of the vegetable and the affected part of the body; thus, according to their principles, they employ against jaundice the *Crocus*, *Curcuma*, *Chelidonium*, *Dracæna-draco*, and *Tormentilla*; the *Rumex-sanguineus* furnishes them with a remedy against the bloody-flux. Sometimes

times they attach themselves to the external form of some of the parts ; it is thus that the roots of many of the *Orchis* tribe afford a powerful stimulus for exciting the generative act ; the fruit of the *Anacardium orientale* fortifies the heart, the *Anacardium occidentale* the reins, the *Brassica capitata* relieves the disorders of the head, and the *Ranunculus ficaria* was employed against the piles. A more enlightened philosophy has long since exploded the errors arising from this source. Those who would examine the question whether the principles of botany lead to the knowledge of virtues and powers, must proceed on these three points. 1. Is a conformity of powers to be inferred from a similarity of habits in vegetables ? 2. In what degree does this hold good ? 3. Whence are derived the principles of these conclusions ?

M. Vrolik, before discussing these three propositions, observes, that the medicinal powers of vegetables, as well as of other natural bodies, can only be known with certainty from experiment and observation ; thus, having found, says he, that rhubarb is purgative, that the cinchona is a febrifuge, we are not without hesitation to attribute the same virtue to plants which resemble them in external characters, but we may suppose so from analogy, and make experiments to determine if it be really so, and lastly employ them with confidence. Similar effects denote similar causes, as well as a similarity of cause announces a sameness of effect. Analogy only leads to error, when it adopts, as a perfect resemblance, that which is only apparent.

These principles admitted, the author examines the first proposition, and endeavours to shew that we may reasonably conclude from analogy a conformity of properties, from a conformity in the structure of the organs. The virtues of plants reside, says M. Vrolik, in their constituent principles ; that is to say, in the oils, salts, &c. But how do these principles, which are shewn by chemical analysis, acquire their
different

different modifications? Without doubt it is by the particular and specific structure of the organs. The caustic and milky juice of euphorbium, the purgative property of jalap, the mucilage of the comfrey root, &c. are derived in the first place from the air, from the earth, and the water; but these principles being differently elaborated according to the organs of different plants, it follows that their products must vary according to the different structure of the organs. The effects of engrafting, so well known, clearly illustrate this. Thus, since the structure of the organs determines in each plant the nature of the principles, it would seem that we should conclude, that if the structure of the organs is similar in two plants, the nature of their secretions, which are nothing else than their virtues or medicinal properties, ought also to be similar.

The author proceeds next to his second proposition, and observes, that the affinity between the powers and the structure of vegetables, would be certain and constant, if the virtues of plants depended solely on the structure of their organs; but these virtues are influenced by the action which different stimuli exert on the vegetable organs. It is thus that the umbelliferous plants which grow in moist places have properties differing from those which grow in the dry; it is thus, that by cultivation the aconite loses its poisonous quality. The author concludes from these observations, that the properties of the same species being subject to variation by the impression of different stimuli on its organs, with more reason should we expect to find a difference in plants analogous only in their structure, when these plants undergo the action of different stimuli.

The third proposition, without doubt the most important, but at the same time the most difficult to discuss, is this: in what consists in general that conformity of structure in plants, from which we may conclude a conformity in their virtues? Doubtless, as the
author

author remarks, a similarity of structure is necessary in the organs which form the active principles or those which contribute immediately to point out the medicinal properties; but these organs being almost imperceptible, it is impossible to establish a comparison between them and the nature of the principles they contain, and which they elaborate. In this case we must recur to the external form, on this ground, that the external form of organic bodies is determined by their internal structure, so much indeed that external conformity announces a similarity in the internal parts. This principle shews, in a striking point of view, the advantages the art of medicine has received from the labours of those Botanists who have employed themselves in a methodical distribution of plants; and especially those who have endeavoured to class them according to their natural habits. The author cites Linnæus, Adanson, Crantz, Medicus, Batsh, Gartner, &c. &c. and afterwards examines, on the principles he lays down, many natural families of the Swedish Botanists: for example, in the family of the *Piperitæ* he observes that the *Arum*, *Calla*, *Dracontium*, which resemble each other in structure, agree in possessing the same acrid burning quality, whilst the *Zostera*, the structure of which resembles equally the *Piperita* and the *Gramina*, participate in the properties of both these families. In the family of the *Umbellatæ* those plants which approach each other in outward form have nevertheless different properties; those which grow in equatic situations are suspicious, whilst those in dry situations are aromatic. This difference in the properties of plants of the same family, results from the difference of the stimuli which act on them. M. Vrolik concludes from the examination of these two families, and from that of some others, 1st. that the properties of plants depend on the structure of the organs which form the active principles. 2nd. That these organs are represented by the exterior structure of the plant. 3d. That before pronouncing on the properties

properties of similar plants, regard must be had to the nature of the stimuli which act on these organs.

ART. LI. *An Essay on Burns, principally upon those which happen to Workmen in Mines from the Explosions of Inflammable Air, (or Hydrogene Gas.) Containing a View of the Opinions of Antient and Modern Authors upon the Subject of Burns, and a Variety of Cases conducted upon different Principles : from which an Attempt is made to rescue this part of the Healing Art from Empiricism, and to reduce it to the Laws of the Animal Œconomy.* By EDWARD KENTISH, Surgeon. Octavo, 176 pages, price 3s. 6d. ROBINSONS, London, 1797.

THE first chapter in the present Essay contains an account of the new chemical doctrines respecting the analysis of air and water ; but we do not deem it necessary to follow the author in this part of his work. In the second chapter he examines the opinions and practice of the older writers on this branch of surgery, and compares them with those of the moderns. It were endless to enumerate the great variety of external applications which have been employed and recommended in the treatment of burns. Cold and hot, irritating and soothing, astringent and emollient, have all been used, without much discrimination, and without at all sufficing to determine, to which a preference is really due, or on what grounds, and in what circumstances, one may be advantageously employed, rather than another. It is evident, therefore, that no principles, we can rely on, have yet been established ; and this *desideratum* it is the object of the present pamphlet to supply. Whether the author has succeeded in his endeavours on this head, we shall leave our readers to determine, after

after having laid before them the facts and reasoning on which his theory is founded.

Although we observe so much contradiction in the external means recommended by different writers, yet with respect to the general treatment of the system, we find no such disagreement. All, both ancient and modern, agree in advising blood-letting, cooling purges, in a word, the whole of the antiphlogistic plan. The treatment suggested by Mr. Kentish is of a directly opposite nature ; but of this hereafter.

In the third chapter the author describes the mode of treatment in common use in the Collieries at Whitehaven. It appears to consist entirely in the application of oils externally, and the complete debilitating plan to the constitution. The relation of a very severe case is subjoined, which terminated fatally under this method.

Chap. 4. Contains an account of some cases where stimulants were employed internally, with oily or debilitating applications to the burnt parts. Although these, from their severity, terminated fatally, yet the author supposes the duration of life to have been lengthened beyond what it would have been, under the first plan of treatment.

This brings us to the third mode, or that particularly recommended by the author, with the reasons which led him to adopt it in preference to the others. Respecting the operation of heat on the body, we have the following observations.

‘ With a view of shewing the effect of heat upon the circulation of the blood, I went into a vapour bath when my blood was going at 60 strokes in the minute ; the range of the thermometer while I was in the bath was from 100 to 116 ; after having been in a few minutes my pulse gradually began to rise, and when I had been there near 20 minutes, it beat at 130 strokes in the minute. From repeated trials of this experiment, I cannot hesitate in concluding, that one of the most obvious effects of heat is to encrease action ;

which if moderately and generally applied, is conveyed to the whole system; but if the action is sudden and great, the vessels themselves are destroyed as organs before they can take on the action, and communicate it to the rest of the system. Thus do the ends of vessels, which a few moments before had functions to perform, become inert and dead bodies, attached to living parts of the same vessels, which from this moment require a process of the system to throw them off and restore itself to its functions, viz. to those of a secreting and absorbing surface, which the skin is in its healthy state: but there are very various degrees between a slight increased local action and a destruction of the part itself; probably there seldom or never happens an accident where a part can be so totally destroyed, but that other parts will only come within the limits of an increased local action.'

' From this view, injuries caused by a pernicious quantity of heat suddenly applied to a part of the body may be termed local injuries from increased action; the mode of relief in this dreadful accident will be thus indicated in order to restore the unity of action; 1st. by gradually diminishing the excitement or action of the part; and 2d. by increasing the action of the system to meet the increased action of the part; holding this law of the system in view: *That any part of the system having its action increased to a very high degree, must continue to be excited, though in a less degree, either by the stimulus which caused the increased action, or some other having the nearest similarity to it, until by degrees the extraordinary action subsides into the healthy action of the part.*

' With this view, holding the part to the fire, seems the best mode of relief; but as parts of the body are injured where this cannot be done, the most stimulant application must be had recourse to, for in this class there is little fear of any of them being greater than that which originally caused the accident; the strongest rectified spirits, made still stronger by essential oils;

add to which, they may be heated as much as can be suffered on the sound parts; these and many more applications of the same class, will give the speediest and most effectual relief. These are only to be continued for a certain time, otherwise they may afterwards cause the very ill they were given to cure, and then to be succeeded by less stimulant applications, until the parts act by the common natural stimuli.

‘ The internal mode of relief will be to give those substances which soonest excite the system to great action, such as æther, ardent spirits, opium, wines, &c. by which means the solution of continuity of action is allowed to continue the shortest time possible, and the unity of action restored, which constitutes the cure. The propriety of practising from these principles, I hope will be sufficiently illustrated in the third mode of treatment.’

‘ If the foregoing views of the effects of heat are admitted, the following will be the law from which the practice in the treatment of burns must be drawn. *That any part of the system having its action increased to a very high degree, must continue to be excited, although in a less degree, either by the stimulus which excited the increased action, or some other having the nearest similarity to it, until, by degrees, the extraordinary action subsides into the healthy action of the part.* Let us for a moment reflect upon the agent which has increased the evil, disengaged caloric, the most violent and active of all known stimuli: if this is the case, we must look for some of the strongest stimuli, and the nearer we get to the one which caused the injury, it is the best for the instant, though even should that be continued of itself, might be injurious. Suppose, for instance, we apply the strongest alcohol at first, and, to render it more efficacious, it should be heated to what the sound part would bear without injury; afterwards it should be gradually diluted until it comes to proof spirit, and the heat diminished, although that gradually, as cold is always pernicious, bringing on that tendency to shiver, which should ever be conti-

nually guarded against, as being a most pernicious symptom, and the forerunner of a violent sympathetic fever: with a view to prevent which, external heat should be kept at a high temperature, and the action of the whole system excited to so great a degree as the safety of the subject will admit of. By this means you make the action of the whole meet the increased action of the part, by which, the lessening of the increased action of the part to join the action of the whole, is rendered more easy: thus there is a unity of intention by both the external and internal means, which leads to the restoration of the unity of action, and thus is the cure performed. It will be said that is only the case when there is an increased action; but when the parts are destroyed, other means should be used, such as emollients, &c.

‘ Some have divided burns into several species, but I shall content myself with dividing them into two; 1st. Those where the action of a part is only increased. 2d. Those where some parts have increased action, and other parts are destroyed.

‘ In parts that are totally destroyed, it is of little consequence what is applied to the dead part, as the throwing off an eschar depends upon the action of parts which remain alive, and not upon what is applied to those which are dead, but I must own I never saw an instance of a burn where, though some parts were totally destroyed, there were not, always, other parts where there was only increased action. Now, as our duty is always to save living parts, our mode of cure in the first instance will be always the same, that is, to cure the parts which have only an increased action, in the doing of which, the dead parts will not be the worse, for the separation of them is a process of the system which requires time, and if the injury is to any extent, draws forth the joint efforts of the system, and even calls up all the energy of its powers to violent fever; which, from the observations in the second mode of treatment, it requires every artificial aid to support, to bring the parts to suppuration, otherwise
the

the subject falls in the contest; for if the living parts have not the power to throw off the dead, the dead will assimilate the living to themselves, and a mortification ensue.'

' When the living parts have been preserved, which according to this treatment will be in the course of two or three days, the dead parts will be more plainly observed, and the beginning of the process to throw them off will be commencing. This process, as has been shewn in the second mode of treatment, must be assisted by keeping up the powers of the system against debility; by stimulant medicines and a generous diet: the eschars will be much aided in coming away by the application of the stimulus of heat, by means of cataplasms frequently renewed; they may be made of milk and bread, and some camphorated spirit, or any essential oils sprinkled upon the surface. These means need only be continued until the suppuration is established, as then a different mode must be pursued.

' I mentioned in a former part of the essay, that when suppuration had taken place, it was the custom to allow the patient a better diet, and to give more stimulant medicines, under the idea of supporting the system under the great secretion of pus, which in general took place if the accident had been severe. In the case of E. F. this mode was adopted. The subject of this case was above a year before he was cured; though I must own the case, from the great sloughs that were thrown off, was the worst I ever saw; and we find in some of the cases related of scalds of the leg, that above eighteen months elapsed before they were healed.

' Having found the former parts of the practice wrong, I began to doubt this also, and determined the first opportunity to convince myself of the propriety of this mode. It was not long before I had a favourable case for the experiment; accordingly after I had supported the system to a suppuration, I then

gradually desisted from my stimulant plan, and was astonished to find that a diminished secretion of pus was the consequence, and the healing process wonderfully quickened. This is clear in the following case of I. K. for that case was finished with bleeding and purging, which used to be the beginning of others.

‘ From this view, it would appear, that the system during the time of suppuration had formerly been distressed with a too abundant quantity of food and stimulus, and had been at the pains of assimilating that which was obliged to be thrown off as an excrement; the system thus excited took up the action of hectic, as in the case of E. F. who had flushings after eating, and exacerbations in the afternoon. Though these symptoms left him as the wounds healed, there is no doubt of their being very much increased, if not entirely caused, by the improper method of cure.

‘ Thus we see the whole of the former treatment inverted; the most gentle soothing means were used both externally and internally, when an accident of this terrible nature happened; these were continued until suppuration took place, and then the system was excited under an idea of supporting it, which not unfrequently so fatigued the system as induced a fever of the hectic form. The present mode is the reverse of this; when a part of the frame has been much excited, this part is not allowed to cease to act for want of stimulus, but is kept in action by an adequate stimulus, gradually diminishing it until it returns to its ordinary action. With the same view the internal means are highly stimulant to the whole system, which must be supposed to be in a natural state at the time of the accident. Thus increasing the action of the whole generally, by strong stimuli; and decreasing the action of the part by lessening the stimuli, the desired end will be more readily obtained, that is, equilibrium of the action will be restored.

Should

‘ Should the injury have gone the length of destroying any part of the body, I have observed that this cannot take place without some other parts of the system only having their action increased. The restoration of those yet living parts must be first attended to ; and this very mode will facilitate the process of throwing off the dead parts, which, when done, and a suppuration having taken place, the exciting of the system by any thing stimulant, either by food or medicine, should be cautiously avoided. Should the secretion of pus continue too great, gentle laxatives, and a spare diet are indicated : if any part, as the eyes for instance, keep weak with a tendency to inflammation, topical bleedings, or small quantities of blood taken from the arm, are useful. To defend the new skin, camphorated oil, or camphorated oil and lime water, equal parts, are very good topical applications. Wounds of this kind heal very fast when the diminution of pus is prevented, by attention to diet : if it is necessary to keep up the patient’s strength, small doses of bark, taken two or three times a day in some milk, will answer that purpose, and will not excite a quickened circulation, as wine, ale, or spirits is apt to do.

‘ By attention to these general principles, I can truly assert, that I have cured very many extensive and dangerous burns and scalds in one, two, three, and four weeks, that by the former method would have taken as many months ; and some which I believe to have been incurable by the former method.’

Having thus laid down his principles, the author proceeds to remark on the several substances which have commonly been employed. Of these he would chiefly rely on alcohol, the fluor volatile alkali, æther, (so applied as to avoid the cooling process of evaporation), and spirit of turpentine.

In applying these we are directed to proceed as follows : the injured parts are to be bathed two or

three times over with spirits of wine, or spirits of wine with camphor, or spirit of turpentine, heated by standing in hot water. After this, a liniment is to be applied on soft cloth composed of the common yellow basilicon, softened with spirit of turpentine. This liniment is to be renewed only once in 24 hours, and at the second dressing the parts are to be washed with proof spirit, or laudanum, made warm. When a secretion of pus take place, milder applications must be made, till the cure is effected.

With respect to the internal treatment, the author observes, that great derangement of the system arises, in certain persons, from causes, which, in others, produce no effect; and that this depends on a difference in the degree of strength: hence, he concludes, that as strength resists the sympathetic irritative actions of parts, and that weakness induces them, we should in all cases make the system as strong as we can, immediately upon the receipt of the injury. In considerable burns, he supposes a disproportion of action to take place between the injured parts and the system at large, or what he styles a solution of the continuity of action; and that, by a law of the system, a considerable commotion arises, for the purpose of restoring the equilibrium, or enabling the constitution to take on the action of the part; not unlike, reversing the circumstances, what happens in intermittents; the shivering which comes on in both cases, is the first mark of general sympathy.

The intention, therefore, according to the author, will be, *the restoring the unity of action of the whole system as soon as possible*, by throwing it into such a state as to *absorb the diseased action*, and then gradually bring down the whole to the natural standard of action, by nicely diminishing the exciting powers. Æther and alkohol, or other stimulants are to be given, in proportion to the degree of injury, immediately, and repeated once or twice within the first 12 hours, and afterwards wine or ale till suppuration takes

takes place, when it will be no longer necessary to excite the system.

This, the intelligent reader will see, involves a great deal of theory ; Hunter, Darwin, Brown, all contribute their share towards this speculative fabric. It is to be hoped, however, that the theory has been suggested by the facts ; and not the facts by the theory ; were the reverse of this the case, (so apt are men to be misled by a lively imagination) we should receive the proofs with considerable caution : for, seen through the mists of theory, facts assume a shape and magnitude altogether unknown to them in their simple state.

We cannot help suspecting, that the author's objections to the use of cold applications are more the consequence of a previous theory, than founded in accurate observation of their ill effects. The use of cold water in burns, seems to us to be established on the surest foundation of facts ; although it must be allowed that there are cases in which, from the great extent of the injury, as well as from other causes, it may be inapplicable ; and therefore it is desirable to have other remedies to which we can occasionally recur. On this head, Mr. Kentish remarks, ' that the action induced by the excess of caloric is paralyzed by the application of cold, which, in this mode of treatment, must be continued until the vital principle of the part so excited, is destroyed, or otherwise the pain returns with redoubled violence ; so that this ought to be called the *killing cure* ; for any thing short of this would be ineffectual.' This statement is certainly inaccurate. We can aver, from personal experience, what indeed has been observed by many others, that in burns of no inconsiderable extent, the application of cold water removes the pain almost instantaneously *, which yet is ready to recur if the cold

* Might not the use of spirits internally, with a view of obviating the shivering which is apt to arise from the cold applications, be of advantage ?

be discontinued ; by perseverance, however, for half an hour or more, the action of the parts productive of such acute sensation, at length ceases to return, and the part is left in a sound state, except that the superficial vessels continue for some time to carry a larger portion of red blood. This favourable termination it is plain, can only be expected to happen in cases where the injury has been insufficient to destroy the life of the part ; when it is otherwise, the dead parts must be thrown off, by a process which requires time for the performance of. The good effects of cold, then, do not depend on a destruction of vital principle in the part, but merely on a removal of the excessive action which was the consequence of the immoderate stimulus of heat, and which action continues after the cause which excited it ceases to exist. Stimulant applications may, perhaps, act in a similar way ; that is, by the removal of the action which the fire had before induced. But which mode of practice is entitled to the preference, we cannot decide.

Even admitting the author's theory, that the cure depends on inducing a unity of action between the injured part and the system, the local application of cold may be defended ; for the power of cold in lessening action is admitted, and by this means the excessive action of the part may be reduced to its proper level.

But whatever becomes of the author's theory, his facts are entitled to great attention ; we shall be happy to find them confirmed by the concurrent testimony of other practitioners, and by the further experience of the author. We shall conclude our account of the work by the following case.

‘ Mr. Hopper, my apprentice, distilling some rose water on the 14th of August, 1795, in a portable tin still, having filled it too full, the head became stopped up, which rendered it exactly similar to Papin's digester. Having remained thus for some time, the fire being urged, and nothing coming over, the head
was

was thrown off with considerable violence, and the contents were thrown upon the operator; he received them principally upon his thighs; his covering was only a thin pair of pantaloons; the thighs were each of them scalded for a space that would have taken half a sheet of paper to have covered the surface, besides the whole of the scrotum and penis, as were different parts of the wrists. In taking off his cloaths, a small portion of the cuticle was torn, and some vesications took place immediately; the parts were profusely bathed with spirits of turpentine, and dressed with the liniment formed with basilicon thinned with spirit of turpentine; this was at half after eleven o'clock; he was put to bed, and had a violent shivering fit; a large bladder of hot water was placed between his legs, and he took sixty drops of laudanum in a bumper of brandy; the pain gradually abated, and in about an hour after he was quite easy, when a little after a slight rigor came on, which was succeeded by a paroxysm of pain; this continued to be repeated at more distant intervals, and with less violence during the course of the day; in the evening he was tolerably easy; his pulse two hours after the accident had mounted up to 90, but now it has returned nearly to its natural standard, 60.'

'Second day. Has passed an easy night, and is now free from pain, nor has he had much uneasiness since yesterday afternoon; on examining the parts to-day when dressing, the extent of the inflamed surface is very considerably diminished, so that a resolution of the inflammation has taken place; or if I may be allowed to use the expression, a great part of the injured surface is cured by the *first intention*. The parts were washed to-day with tincture of opium and camphorated spirits, and the same digestive liniment as before was used for the plasters; he had made a great quantity of urine during the night, which was strongly impregnated with the odour of turpentine, a strong proof of its absorption by the skin; the great
cause

cause why I think it preferable to any other application.

‘ Third day. The wash having come in contact with the part where the skin was off, had caused a slight degree of pain, which he described to be similar, infinitely less in degree, to what he originally felt in some of the paroxysms; it soon shaded itself away, and he remained easy; this part itself had been well washed at first, though the skin was off, with the spirit of turpentine, and so far from having given any pain, it abated the pain from the moment of its application; the appearance of the parts continues nearly as yesterday, except that there is a little moisture where the skin was off, which seems to hold a middle state between serum and pus: the exciting means having so astonishingly brought the surface to a secreting state, they were desisted from, and the parts covered with the following ointment, *Ungt. Cerae albae ℥ ij. Florum Zinci ℥ i.*

‘ Fourth day. Has been very easy since the last dressing; one of the places where the cuticle was off is thinly covered with very good pus; the inflammation has nearly disappeared; in those places where the cuticle was detached from the skin, it is cracking, and a new cuticle is forming underneath, without any appearance of moisture.

‘ Fifth day. The part which was covered with pus is drying, and nearly skinned over; the cuticle of the penis and scrotum peels off in large scales, and leaves a perfect skin underneath; a considerable degree of itching in the part; continue the same ointment, and take an ounce of salt in a basin of broth.

‘ Sixth day. The whole of the parts covered with cuticle, but as it is yet tender, to continue the plasters for a day or two; he may now be said to be cured.

‘ The whole of this case has in so pointed a manner established the superiority of practice when conformable to the laws of the animal œconomy, that
upon

upon its revifion, it appears fo unlike the common courfe of any injury of even half its magnitude that I ever faw, as to make me doubt it will meet with that ready credit which I know it deferves: in comparifon not only of the efficacy, but of the manner, I think it merits Afclepiades's motto, "*tuto, celeriter, et jucundé.*"

ART. LII. *Difertation on the Chemical and Medical Properties of the Bristol Hotwell Water. To which are added, Practical Observations on the Prevention and Treatment of Pulmonary Confumption.* By A. CARRICK, M. D. Octavo, 167 pages, price 2s. 6d. CADELL and DAVIS, London, 1797.

IN recommendatory treatifes on mineral waters, by phyficians refident at the fprings, we are involuntarily led to fufpect, that fomething more than the pure love of fcience may have given rife to the publication; and therefore our expectations of novelty and information are feldom raifed very high, with regard to works of this ftamp; for what, indeed, on fuch fubjects, remains to be faid? Laboured analyses have been made of the mineral fprings, and a long catalogue of difeafes given, in which they have been fupposed to exert fpecific powers; but although the firft may have been accurate, it is feldom that the laft are to be much relied on. The public, indeed, have been ready enough to take thefe matters on truft, and fo far, perhaps, the great end of the author has been answered. It is to the public for the moft part, that the appeal has been made, and they have feldom fhewn themfelves faftidious critics.

We have no intention, however, by thefe remarks, to depreciate the performance before us; for, independent

pendent of local matter, it really contains many valuable observations on a disease whose ravages do not seem to have been materially lessened by any improvements which the science of medicine has undergone in modern times.

The first part of the pamphlet is devoted to the investigation of the sensible and chemical properties of the Bristol water, and the natural history of the country, as far as relates to this subject. This part of the work appears to have been conducted with considerable accuracy, and is especially interesting, because no analysis of this water has been made public, since the recent improvements in chemistry have taken place.

The Bristol water is inodorous, exceedingly limpid, sparkling and pleasant to the taste, and when newly drawn, numberless air bubbles are seen rising to the surface, or adhering to the sides of the glass. Its heat is about 74° , and its specific gravity 1,00077.

Respecting the composition of the Bristol water, it appears, from the author's experiments, to consist of the following principles: a wine gallon of 231 inches is impregnated with

Muriated Magnesia	$7\frac{1}{4}$ grains
Muriated Soda	4
Vitriolated Soda	$11\frac{1}{4}$
Vitriolated Lime	$11\frac{3}{4}$
Carbonated Lime	$13\frac{1}{2}$

Making together of solid matter, $47\frac{3}{4}$ grains.

Carbonic Acid Gas	30 cubic inches
Respirable Air	3

Making together of gaseous fluids, 33 cubic inches.

Dr. Carrick attempted to prove the accuracy of his analysis by synthesis, but was obliged to employ a much larger quantity of carbonic acid for the suspension

sion of the carbonated lime, than is found in the natural waters.

The second part relates to the *medical properties* of the Hotwell water. From the impregnation of these waters, as shewn above, we should not be very sanguine, *a priori*, in our expectations of active medicinal effects, nor is the evidence in their favour such as would satisfy a very scrupulous inquirer. It is sufficient here to state, and the information may be useful to those who may occasionally wish to get rid of a troublesome patient, that they are accounted serviceable in scrophulous disorders, dysenteries, and diarrhœas; in cases of atony, indigestion, and loss of appetite, obstructions of the liver, and various disorders commonly denominated bilious, brought on by irregular living, abuse of strong liquors, and long residence in tropical climates. In diabetes, too, the Bristol water is supposed to exert considerable effects.

But the disease for which the Hotwells are chiefly resorted to, is pulmonary consumption. On this subject Dr. Carrick observes, that the utility of a journey to Bristol, undertaken while a cure is yet practicable, is demonstrated by hundreds of examples annually; where the disease is totally removed or prevented in many, and suspended or mitigated in others.

Several pages are next employed in pointing out the times and seasons for drinking the waters, and the superiority of the Hotwells over the western coast of England as a winter retreat for invalids.

The latter part of the volume contains practical observations on the prevention and treatment of pulmonary consumption. After a concise yet clear description of the symptoms which characterize the disease, the author proceeds to treat of the predisposing and exciting causes. The greater frequency of consumption in this, than in other countries, has been generally ascribed by authors, to an insular situation, and a cold and variable climate. Though he allows these

these circumstances to have considerable influence on the frequency in question, yet he thinks them insufficient to account for the whole effect. He suspects that we must principally look into our national habits, and manner of living, for the solution of the mystery; and the following are his observations on the subject.

‘ I believe it is universally agreed that in no European nation is the use of animal food so general through all ranks of people; indeed in no other nation, Holland perhaps excepted, are the lower orders capable of purchasing it in such abundance; a smaller proportion of vegetable matter of course enters into the diet of the English; which is, therefore more nutritious, and, in common language, more heating and inflammatory, than that of other nations. The natural consequence of this sort of diet, is a greater degree of irritability in the muscular fibres, and a fullness of blood beyond the standard of health, rendering them more susceptible of inflammatory diathesis. The use of strong fermented and spirituous liquors, is likewise more general, which may co-operate with the stimulant diet, in occasioning the inflammatory diathesis alluded to,

‘ That full diet or strong liquors, are not propitious to health is in general certain; although some particular exceptions may exist. I have invariably observed the water drinkers, amongst the higher ranks (I mean those, who from choice, drink no stronger liquid) to enjoy the best health and the clearest intellect; and those nations which are least addicted to the pleasures of the table, will be found, *cæteris paribus*, the freest from disease. In confirmation of this doctrine I might cite the Hindoos, the most temperate, and the most healthy of men. Even the French and Italians are certainly less affected with an eternal catalogue of diseases than the English. They are a hardier and healthier people, through all ranks. Both these nations are more abstemious. I speak of them as they were. In France drunkenness was comparatively
rare

rare ; in Italy a person in a state of intoxication was, in the streets at least, a very unusual sight. Were we to abandon the so very general use, or rather abuse of wine, and other strong liquors, a very great proportion of diseases, which detract so much from the comfort of polished life and affluent circumstances, would speedily disappear. Men's ideas are commonly very erroneous with respect to the abuse of strong liquors. That abuse begins much within the limits of intoxication. In the higher ranks, he who drinks one bottle only, reputes himself a sober man ; and he who does not exceed half that quantity daily, is considered as remarkably temperate. But although either of these allowances may be often persisted in for some years with seeming impunity, there are few indeed, of those men of iron, whose constitution will not be undermined at last, by this regular and constant siege. It were better, for young men at least, so far as health only is concerned, and abstractedly from considerations of morality, to get drunk once a week, and abstain entirely the other six days, than regularly to indulge in what may be called a moderate allowance, of port, or Madeira, or other strong wines, every day. In the first case there would be time for the ruinous fever to subside entirely, and for the constitution to regain its wonted tone ; but in the latter case there is no intermission. The system is kept continually in a state of unnatural excitement, which hardly any strength of stamina is long capable of bearing up against. Hence the almost uniform conclusion : gout, stone, jaundice, dropsy, palsy, apoplexy, mania, consumption : with the bequest of such diseases, together with a general feebleness of body and often of mind, to their ill-fated offspring. These are the fatal effects of the Promethean fire. It is not to be understood from hence that wine is not useful as a medicine or a cordial, particularly in the decline of life : although the celebrated Cornaro, and many others, have given proofs of its being unnecessary, even at the most ad-

vanced age. But however congenial or salutary wine may prove to the languid nerves of the aged, it must always be pernicious to the young and inflammatory fibre. Were men to drink water only, or small beer, while young and vigorous, the moderate use of wine would probably add both to the comfort and duration of that old age, which they by this means might expect to attain.

‘ But the abuse of wine does not always originate in social intercourse and youthful folly. In the present day, the mother, afraid as it would seem, least her darling child should retain any portion of vulgar health, carefully initiates him into the mysteries of Bacchus, from the very cradle; and as soon, almost, as little master is capable of swallowing, he is indulged with his regular allowance of wine. No wonder that gout, dropfy, schirrous liver, &c. should make such a conspicuous figure in the history of his “ life and sufferings.” From this early initiation into unnatural and luxurious habits, the native vigour of the best stamina must soon be worn out by premature exertions; and if the child is lucky enough to escape the violence of accidental colds and eruptive fevers, he will quickly fall a prey to diseases of the asthenic class, and find himself an old man in constitution, while he is yet a boy in years.’

The justness of these remarks will hardly be contested, even by those who are the objects of them: yet the effect they will produce is probably not very considerable; for reason is but a weak advocate, when opposed to appetite and rooted habits.

In the treatment, the author recommends the antiphlogistic plan, in preference to the stimulant and tonic method; a method which theory first seems to have introduced, but which experience appears not to have sanctioned. ‘ When ulceration has once taken place, he observes, the disease frequently runs its course, as formerly described, in a few months; but at other times
it

it is protracted for several years, and even to old age. This seems to arise from the indolent and circumscribed state of the ulcer, from the smaller degree of irritability in the constitution, and the less violence of the fever. To bring about this indolent state of the disorder when ulceration actually subsists, is an indication of the greatest importance; and affords the best prospect of curing the complaint as well as of prolonging life. This is chiefly to be accomplished by a steady perseverance in the plan formerly laid down for the prevention of ulceration, which continues still equally necessary, as long as the inflammatory symptoms subsist with violence.

‘ In the more early stages of the confirmed, as well as in the incipient consumption, our greatest dependence continues to rest upon the antiphlogistic regimen, blisters, setons, and particularly the lancet; whether with a view of palliating symptoms, or of suspending the progress of the disorder. It will, however, be frequently objected to bleeding in this stage of the complaint, that the debility is already great, and it might be thereby increased.

‘ But this objection is founded rather on supposition than actual observation: for wherever the debility is occasioned by inflammatory fever, as in this case, blood-letting by lessening that fever, will invariably be found to lessen the debility; and in such circumstances the patient would be weakened more by a single night’s fever, than the loss of many ounces of blood*. Consumption may no doubt have arrived at
that

* ‘ The reader will remark, that I have recommended the use of the lancet more freely, in the different stages of this disorder, than the general practice of the present day seems to countenance. I do so, not from any preconceived theory of the disorder, although it appears perfectly consistent with theory, but from actual observation of its superior utility. I entered on the practice of physic with prepossessions of an opposite tendency.

‘ In this country, blood-letting, not only in phthisis but in most other diseases, has of late years fallen into a general discredit, which it is not
K k 2 easy

that period when no relief could possibly be derived from blood-letting nor low living, and where, on the contrary, life may be prolonged, and the symptoms mitigated by a free indulgence in animal food, and wine, or even stronger stimulants: these instances of temporary benefits frequently induce the patient or his relatives to arraign the skill of the physician, and to infer that the disease might have been cured, had this practice been adopted sooner. It appears indeed probable, that cases of this sort have been sufficient for the young and the sanguine amongst medical men, to build a theory upon; and we have occasionally seen pork broth, myrrh, steel, wine, and other stimulants, recommended by authors in the cure of consumption in all its stages.'

The remarks on the other substances employed in the treatment of phthisis are not sufficiently new or important to detain us. The aerial remedies, have not proved such in the author's hands; but his experience of them has not been extensive.

easy perhaps to account for. I am inclined to suspect that when philosophy came to be applied to physic, and the theories of the old physicians were discovered to be founded on false principles, their practical observations were too frequently discarded along with them without sufficient consideration. It ought to have been remembered that art in general precedes science, and that the practice of the ancients might in some respects have been good, although their dogmas were fallacious. I will not pretend to insinuate that blood-letting and the antiphlogistic regimen may not have been carried much too far in many cases within the present century; but certain it is, for some years past the opposite system has been carried to an equally hurtful excess; so apt is man, in the pursuit of knowledge, to run from one extreme to another.'

ART. LIII. *A Letter on the Claims which Practitioners in Medicine have to be Exempted from the New Duties on Horses and Carriages. By a FRIEND TO PHYSICK. Octavo, 15 pages, price 6d. SEELEY, London, 1797.*

THE claims of the faculty to relief from the assessments above alluded to, are well made out and supported by the author of the present Letter; and, (what is of more importance), have been recognized by the legislature. To be more particular, would be now superfluous.

ART. LIV. *Suite d'Experiences sur la Propriété Veneneuse de l'If. i. e. Experiments on the Poisonous property of the Yew Tree. By C. I. BREDIN, Professor of the Veterinary School of Lyons, (Magazin Encyclopedique, 1797.)*

THE poisonous quality of the Yew (*Taxus baccata*, L.) has been long known, as appears from passages in the works of Dioscorides, Pliny, and Cæsar. Amongst the moderns, Plenck and Selle have adduced several instances of children destroyed by the berries of this tree.

Haller, on the other hand, says, that far from being prejudicial, this tree is capable of affording useful forage. It appears surprising that this great man should have been so much misinformed, respecting the properties of a substance which acts with so much violence. But the cause of his error is thus accounted for by M. Wibourg, Professor of Veterinary Medicine at Copenhagen.

Two horses, impelled by hunger, eat of the yew tree, and were both destroyed by it. This accident induced M. Wibourg to make a variety of experi-

ments on the subject, which afforded a confirmation of this fact. Having occasion afterwards to go into the country of Hanover, he wished to make inquiry into the reasons Haller had, for asserting the innocent qualities of the yew. He satisfied himself that the tree was the same, and possessed the same sensible qualities, as in Denmark; the natives allowed its poisonous property, and although they were in the habit of employing it for the purpose of fattening their cattle, it was not without the greatest precaution that they did this. This precaution consisted, in giving at first a small quantity of the leaves of this tree, mixed with other food, increasing daily the proportion of the yew, till at length it was given alone. They remarked, that it was dangerous to suffer the animals to drink soon after taking it. Haller saw only that they employed the yew as forage, and thence concluded it was a wholesome plant.

M. Bredin once eat five of the berries well ripened, without any other inconvenience than an inclination to vomit, which he attributed at the time to the disgust he felt at the glutinous nature of this fruit. Or he supposes the poisonous quality may reside in the grains, which he did not swallow.

In his experiments, M. Bredin found that horses eat the mixture of yew and oats with reluctance: their death was announced by appearances of sadness and depression. The stomach after death was found indurated (*racorni*) and inflamed. He considers this poison as narcotic in its mode of operation.

ART. LV. *Extrait d'un Memoire sur un vice de conformation dans les voies Urinaires. i. e. Extract of a Memoir read at the Philomathic Society, by Citizen ROBILLIARD, on a mal-conformation of the Urinary Passages.* (Magazin Encyclopedique, 1797.)

IN the year 1762, M. Tenon laid before the Academy of Sciences some observations very similar to the present. The imperfect construction of parts, which M. Robilliard here describes, exist in a child three years of age, in whom the distinctive marks of sex are wanting. The arteries terminate above the pubis, on the lateral parts of a swelling equal in bulk to the size of a large hen's egg, but which undergoes a variation in this respect. When the child cries, it becomes more distended. The ureters, the extremities of which terminate in the form of nipples, become rigid, and then the urine is thrown by a jet to some distance. M. Robilliard supposes, that the tumour is produced by the posterior part of the bladder, which, in this case, forms a kind of herniary sac to the intestines and omentum. The umbilicus is very indistinct; its situation, however, is pointed out by a transverse fold above the tumour.

The chief complaint of the child is a considerable descent of the rectum, which is irreducible.

Following the above, are some observations on the same organs, by Citizen Larrey.

In a subject examined at Toulon, it was observed, that the right kidney had two distinct pelves, separated by the insertion of the renal vessels; the infundibula, which opened into these parts, had no communication with each other: so that it might be said, this kidney consisted of two secretory organs, closely united by a continuity of substance. From each of these pelves proceeded an ureter. The superior of the or-

dinary diameter, passed before the renal vessels, afterwards reached the inferior ureter, the diameter of which was 6 or 7 times greater, and descended with it, on its internal side. Thus contiguous, they arrived at the superior brim of the pelvis, where the smaller canal quitted the other, to go to be inserted at the usual place at the side of the bladder. The larger, on the contrary, having passed along the bladder, was continued towards the lateral and inferior part of the prostate gland on the right side, penetrated into it, and directed itself obliquely through its substance, to open into the canal of the urethra, near the verumontanum. This opening was extremely contracted.

M. Larrey is induced to believe, that this supplementary canal might supply the place of the urinary bladder, and even fulfil its functions, if, from any cause, they should be suspended.

ART. LVI. *Observations sur la Nature et sur le Traitement du Rachitisme, &c. Observations on the Nature and Treatment of the Rickets, or Curvature of the Spine, and of the superior and inferior extremities. By M. PORTAL, Member of the National Institute of France. 1 Vol. Octavo, PAIN, 1797.*

M. PORTAL is of opinion that the rickets is very rarely an original disease, but is almost always the result of some internal and antecedent affection. Numerous observations, he thinks, prove, that there are six different species of this malady; to wit, the venereal; the scrophulous; the scorbutic; that which is the consequence of eruptive disorders; that which accompanies or which succeeds abdominal obstructions; and, lastly, that which may be denominated rheumatic or gouty.

With

With regard to the first species, the author describes the various effects of the venereal disease on the bones, and especially on the vertebral column, as shewn by anatomical inspection. The cure of this species is to be effected by the administration of mercury in various ways. The treatment of the second species consists in issues, antiscorbutics combined with mercurials, mild purgatives, the temperate bath, (*bains presque froids*) and abstinence from milk and animal food.

In the scorbutic species of the disease, which more rarely occurs, mercurials exhibited alone are condemned. In rickets proceeding from the suppression of cutaneous eruptions, a frequent cause, the author remarks, diaphoretics, and a vegetable diet are chiefly recommended. In that which proceeds from visceral obstructions, antiscorbutics and mercurials are advised, together with proper nourishment.

The gouty and rheumatic species of the disease is apparent from the withered state of the limbs frequently observed to follow these maladies; the cure depends on the removal of the original affections; that is, according to M. Portal, on the expulsion or correction of the *arthritic and gouty humours*.

Other rare species of the disease are mentioned by the author; in Italy, for instance, the consequence of undergoing the operation of castration; and that which arises from masturbation.

ART.

ART. LVII. *Experiences sur l'insufflation d'un fluide dans les veines d'un animal vivant. Experiments on the injection of a fluid into the veins of living animals, extracted from a memoir read at the Medical Society of Emulation in Paris.*

(Magazine Encyclopedique.)

IF, after having opened a vein in an animal, a tube be introduced into its cavity, by means of which a single bubble of air only is injected, as soon as this elastic fluid reaches the heart, the animal utters a cry, and instantly expires. The nearer the vein opened is to the heart, the speedier is the death which follows.

On opening the body we find the right auricle and ventricle, and the pulmonary artery filled with frothy blood, and mixed with the injected air; the pulmonary veins, the left auricle and ventricle are found in their ordinary state.

An important discussion took place in the society on the immediate cause of the death of the animal in this case. Some thought that the air, arrived at the cavity of the heart, might act as a sedative atonic poison; this opinion they supported on the chemical properties of some substances which act differently according to the nature of the organs to which they are applied.

Others saw nothing in the death of the animal but an effect of a purely physical or mechanical cause; they maintained that the interposition of air, dilated by the heat of the animal, would be sufficient to prevent all communication between the pulmonary arteries and veins, and referred to the phenomena observed after death.

The society, with a view of removing their doubts on this head, nominated a committee to repeat these experiments, and the following is the result, as given by Citizen Bichet.

Atmospheric

Atmospheric air that had been inspired occasioned the death of the animal. Carbonic acid gas, azotic, hydrogen, and oxygen gas, produced the same effect.

Cold water injected into the veins had no such consequence.

The conclusion drawn, therefore, from these experiments was, that the interposition of the air between the arterial and venous columns of blood, was the immediate cause of death.

ART. LVIII. *Application de l'effet du suc de Belladone sur les yeux, à l'opération de la cataracte. An account of the effect of the juice of the Belladonna on the eyes, and the application of it to the operation for the cataract.*

(Magazine Encyclopedique, 1797.)

DOCTOR Reimarus, correspondent of the society at Hamburgh, having perceived that some drops of the extract of the Belladonna, dissolved in water and dropped into the eye, produced a paralytic state of that organ, of short duration, but under which the pupil became extraordinarily dilated, so much that the iris was reduced almost to nothing, proposed to employ this method in preparing the eyes for the operation for the cataract, and Dr. Grasmayer, who practises at Hamburgh, adopted it with advantage. This juice produces its effect in the space of half an hour. The great enlargement of the pupil which follows, enables the operator to divide the cornea to the greatest extent, without danger of wounding the iris: likewise, the paralytic state induced on the retina may prevent those terrible effects which frequently ensue from a too free or too early admission of light.

This fact, if sufficiently established, is well worthy the attention of the oculists; for without regard to its
general

general application, the eyes of particular individuals are found so extremely irritable, as to render an operation on them almost impracticable. In such cases, the above discovery would probably be productive of great utility.

ART. LIX. *An Enquiry into the Nature and causes of the great mortality among the Troops at St. Domingo: with practical remarks on the Fever of that Island; and Directions for the conduct of Europeans on their first arrival in warm Climates.* By HECTOR M' LEAN, M. D. *Assistant Inspector of Hospitals for St. Domingo.* Octavo, 358 pages, price 6s, CADELL and DAVIES, London, 1797.

THE fever which has now so fatally prevailed for several years in the western World, has often been the subject of these pages; and from the present work, our readers will see, that much matter yet remains for discussion; for whilst the ravages of this destructive malady continue yet almost undiminished, there is too much reason for concluding that we have advanced but little in our investigation of its nature and causes.

From the prefatory remarks of the author it will appear, that many important circumstances induced him to make public the result of his experience and observation on this interesting subject; he labours to prove, that what has been termed the yellow fever of St. Domingo is not an infectious disease; that it is not a new or peculiar distemper, but the common remittent endemic of that country, applied to the english constitution, and accompanied occasionally with yellowness, as an accidental symptom only. The opportunities Dr. M' Lean possessed, during a residence of three years at Port-au-Prince, at the period when the disease raged with the utmost violence, of investi-

gating

gating its causes and marking its progress, entitle his opinions to much attention, and undoubtedly confer a considerable degree of value on the present performance.

In the first section the author describes the situation and other local circumstances of St. Domingo, which, with other causes, appeared to him to account sufficiently for the rise of the fever. The site of the Town of Port-au-Prince is on a marsh gained from the sea, the skirts of which are covered with weeds or mangroves, where decomposed animal and vegetable matters are promiscuously thrown. The plains which surround the town are subject to be overflowed by the heavy torrents which rush from the mountains, and which stagnating, leave a marsh, on which a vigorous sun acts daily, and evaporates its noxious particles. This is a never-ceasing cause of disease, a nursery constantly rearing mortal poison. In this unhealthy spot, were the British Troops hemmed in on all sides by the enemy, without a due supply of good vegetable or animal food, and depressed by every thing that could sink the mind into despondency. The constant ravages of fever amongst them spread a general gloom, and weakened the vital powers; add to this, the survivors were exposed to excessive fatigue, from the diminution in the numbers which death had occasioned. The habit of body of the English, coming from a northern climate, and rendered irritable by an indulgence in animal food and strong drinks, was supposed likewise to give a great aptitude to the impression of noxious miasmata.

Another cause disposing to ill health in St. Domingo is the land winds, which in the middle of the day are hot, drying, and oppressive. These winds suddenly check perspiration, the great source of coolness and health, and very generally excite fever, and renew the paroxysms in convalescents.

The following is the description of this fever, as it appeared to the author: we think it necessary to remark
here,

here, that opinions seem to be very improperly blended with facts: a more appropriate place might certainly have been found for the explanation of the phenomena of the disease, and for the purposes of theory.—The remittent of St. Domingo, attacks at all seasons; but with more violence and destruction, during the months in which a vigorous exhalation is going forward; and when the falls of rain are less frequent. From the beginning of May, till the middle of November, the Remittent continues its ravages with encreasing violence; but when the rains fall plentifully, and the heat is somewhat diminished, the intermittent form begins its reign. They generally commence the attack, either in a state of indirect debility, or where there is considerable excitement. The remittent usually attacks by lassitude, and weariness, or by chilly fits, and slight pains in the bones, with great inclination to sleep, and an unaccountable listlessness of every thing around. At other times it is ushered in by a regular paroxysm of ague, which, going through its common course, leaves the patient languid, and weak; in this state the remittent assumes its proper form. The pulse at times, is little altered, and no great change in the heat of the body; but the eye has an expression of anguish, sometimes of ferocity, and a certain grimness takes place in the countenance, as Dr. Jackson has remarked in the fever of Jamaica. In some instances the pulse is oppressed and contracted, and the patient is under the influence of very low spirits, and inclined to sigh; in others, the pulse at once is hard and full; the face flushed, and the patient complains of intense head-ach. These several modes of attack are not uncommon. The patient continues in this state during the night, and at times enjoys a calm sleep, at times suddenly starts; and forgetting where he is, sees himself assailed by dreadful phantoms, and wishes to rush into the street, or jump through the windows. When recollection returns, he usually falls listless, or fullen on his bed; and, sighing, sleeps again. During this time all the secretions are considerably disturbed;

the

the urine is in small quantities, high coloured, and turbid; perspiration is irregular, interrupted, and in small proportion; the saliva becomes viscid, and the tongue is covered over with a crust of various colours; the bile is secreted in unusual quantities, and thrown into the stomach, from which it is again speedily ejected; the skin becomes absolutely impervious, and feels like a board; no impression can be made on it by any plan of relaxation, or by any stimulants we yet know. On the second, often on the third day, the dangerous determination to the vital organs begins; the stomach is assailed, and its coats affected with inflammation; the vessels of them become distended with an unusual quantity of blood, which throws them into an inordinate action, and gives them all the irritability of inflammation; the whole inner surface of the stomach may in this state be considered as one inflamed surface, to which nothing is applied with impunity; the vessels, thus distended and active, secrete more copiously, and their secretion is poured into the stomach, which acts with violence to return it; and thus supports a constant determination to itself. At length the vessels overcome by perpetual action, lose their tone, and pour out a portion of blood, which, mixing in the stomach with the former secretion, and an addition of the bile, create what is termed the black vomiting, a most dangerous symptom; because the state necessary to produce it, is a state of the greatest derangement. There are proofs of this progress; the pain and irritability of the stomach, and the great secretions in its cavity, argue, in the most decided manner, that the blood vessels are surcharged, and in a state resembling inflammation; that this is really the case, appears from dissections, which show the inner coats of the stomach peeled off, and separated. This could not happen without organic lÆsions; and such lÆsions are commonly the result of previous inflammation, and increased action. In this manner is the incessant vomiting accounted for, on pretty certain principles. That this is really the case,

is

is further argued from the state of the skin, it being found completely locked, and shut up, refusing a passage to its most essential and customary discharge. The urine, in common cases of disease, is increased when the perspiration is diminished, and a balance is supported between them; but this does not happen in the remittent; for though the perspiration is almost entirely suppressed, the urine seldom suffers an increase. The mass of blood, in these circumstances, must be augmented by the retention of different secretions; the consequence must be, that the weaker or more lax vessels will be surcharged, and suffer all the consequences of inflammation. The liver, the stomach, and the brain, possessing a large system of vessels, in a soft medium, become particularly liable to these determinations; and accordingly we find, that in these organs they really take place. In some instances the patient, from the very first moment, feels only a kind of insensibility; and languishes away his life without any pain. The powers of life, attacked in their very principle, yield gradually to the irresistible oppression, of the morbid cause; whilst the system, unable from the beginning to make any proportionate resistance, surrenders itself to dissolution without a struggle.

‘ During this progress, changes seem produced in the great mass of the blood itself; what oozes from the gums exhales the most foetid odour, and the many spots, which, under the title of vibices, or maculae, are dispersed over the body, argue some considerable change in the solids and fluids. From the foetor of the breath, and the horrid smell of every matter issuing from the sick, I think it will be difficult to question the existence of a putrid state. We see that in the small-pox, a matter often destructive to life is introduced with impunity in numerous instances; and I can see no reason why the putrefactive state may not exist, in a certain degree, whilst the living phenomena are going forward. If it be not a putrefaction in the fluids, we are yet to learn, what it is that produces
that

that foetid smell, whilst the blood, by issuing from the gums, nose, and anus, seems really in a more fluid state. A laxity of the fluids alone will not explain the hæmorrhage, without a change in the blood itself; and should we admit, that laxity sometimes accounts for the flow of blood, we still shall be in the dark as to the fœtor. It may be proper to remark, that I have frequently seen the dying in a situation I could not approach them, from the very putrid smell of their bodies; and that, immediately on their death, they were insufferable, and tainted the air to a considerable distance. The appetite is entirely gone, but but when in any degree present, becomes extremely whimsical and capricious. The desire for drink is often remarkable; but small portions only can be swallowed at a time; and these, unfortunately, are again thrown up with violent exertion. The remittent is at times ushered in with convulsions, which I have seen repeated at the periods of exacerbation.—About the third day, sometimes on the evening of the second, or perhaps as late as the fifth, the yellowness begins to make its fatal appearance in streaks along the cheek, forming angles with the alæ of the nostrils; they pursue the course of the jugular; the back is also tinged in the same irregular manner; the first streaks extend, and become more apparent; the vessels of the eye are evidently affected, and in a few hours the whole body assumes a golden hue; the black vomiting increases, and becomes darker; the patient feels at once relieved from the pain in his stomach; talks of his happy sensations, which, alas! are only delusive preludes of his death. The pulse flutters, and becomes feeble; cold sweats break out on the face; the extremities become cold; the eye, inexpressive, and half closed, sinks in the socket; the pulse entirely ceases, breathing becomes laborious, and the rattle in the throat announces the near approach of dissolution, which a convulsion generally closes.

The yellowness in this fever, the author is of opinion, is not always bilious, but an accidental variety, marking only its worst stage, and depending on a change in the serum. He has seen the disease proceed to its fatal termination without the least yellowness whatever; the same symptoms and movements took place as when the yellowness was present, and no peculiar symptoms accompanied it. Where recoveries took place, the tinge in the skin has continued for a long time, without any of the other symptoms which characterize jaundice. The manner of appearance of the yellowness, and its progress were likewise different from what happens in jaundice; the neck, in the course of the jugulars, the cheeks, in an angle from the nose, forming streaks, give the first intimation; yellow tinges pass along the breast and back irregularly, and the feet are often deeply coloured before the rest of the body is materially affected.

Critical days were hardly distinguishable. The duration of the fever was sometimes prolonged to the twentieth day, and yet it proved fatal. Crisis in this fever was seldom very evident; sometimes a profuse perspiration, sometimes the return of sleep, an hæmorrhage at the nose, or sudden diarrhœa, put an end to the disease; on other occasions it terminated in jaundice, which came on by slow degrees, and seemed to remove all the febrile symptoms. In some instances, the patient was relieved at once, by the appearance of an inflammatory spot on a particular finger or toe, as if the cause of fever had escaped by explosion.

With respect to prognosis, the youth of the patient, and a plethoric state, were invariably circumstances of danger. If the disease came on under a state of indirect debility from debauch or fatigue, it was always attended with danger.

The morbid phænomena, which indicated great danger, were the following: such an oppression of
all

all the functions at once, as greatly impeded their action; the pulse being enfeebled and the strength at once remarkably diminished. Suppressed animal movements, and a general carelessness as to the event, indicated no favourable issue; in fact, where the constitution made no resistance, and seemed at once, as it were vanquished and subdued, there was more danger than even in a violent re-action; because it argued the compleat energy and vigour of the morbid cause. When the patient changed his natural manner of lying in bed, and assumed any whimsical or unusual position, it was no favourable symptom. Sighing indicated danger; it did not seem to arise from meditation on the disease, but involuntarily, from congestion about the vessels of the heart and lungs. The fæces and breath being remarkably foetid was a fatal symptom, frequently; nor were hæmorrhages from the nose, if they were repeated, signs of safety. The tongue afforded also some signs to assist the judgement: if it trembled remarkably on being thrust out, it was unfavourable, or if it was covered over with a leaden-coloured crust, whilst the edges wore a brilliant red appearance; a brown or bilious crust is not so formidable, especially if it appears loose, and easily separates when touched. The violence of the general symptoms is commonly attended with danger: vomiting, head-ach, great prostration of strength, when long continued, are strong symptoms of derangement, and argue an intense disease. The nervous system affords many alarming signs of danger. Tremor of the body when moved, with a tendency to faint on slight exertion, justly alarm the observer; the fierce delirium, which proposes heroic action, and raves of battle, is less to be dreaded than the low, muttering, grim, melancholy, which is lost in meditating wrath, without an attempt to move. But above all, the eye affords the best means of judging, in conjunction with the several symptoms already mentioned: a certain pensive sadness in its glances, an expression of anguish

unspeakable, a langour in its movement, an inclination to shut out all objects, are signs of the greatest danger, especially when combined with many of the circumstances above stated.

It has been already said, that a plethoric state of the system enhances the danger in this disease ; when the fever invaded such habits, it was rapid, severe, and violent. Young men, from the age of 15 to 25, or 30, the irritable and plethoric period, were more severely affected than those more advanced in life ; and old men, who in general enjoy health in warm climates, better than in cold, when they happened to be attacked with the fever, it proceeded with little violence to a happy termination. In women too, the disease assumed a milder form. The reason of the greater fatality to the young and plethoric, is supposed to be, the ease with which determinations are made in these habits to particular organs, and the violence of re-action. From these facts the author deduces an important practical conclusion ; that the troops who are destined to serve in St. Domingo, ought to be made up of men at a particular period of life ; men, from the age of 35 to 50 years, are in a condition to act in these situations at a time, when, in colder climates, they begin to lose their activity and strength. On a knowledge of the fact above stated, likewise, the means of prevention must especially depend, and the preparation of those going into a hot climate, from a cold one, be founded. If the inflammatory diathesis constitutes the danger, the preparation must be directed to diminish the tendency to this. The effects of heat in expanding the fluids, and rendering the solids more irritable, are always seen on the approach to a warm climate. Hæmorrhage from the nose, feverishness and tension of the pulse, very commonly occur in these circumstances. Our great aim, then, must be, the author observes, to put the body in a condition not to suffer from the unavoidable
expansion

expansion and change that must go forward. All those who are vigorous, plethoric, or irritable in their constitutions, ought to be bled in proportion to their strength; cooling purges should be exhibited; and a sparing diet enjoined. By these means, that state of the system is in some degree produced, which the climate itself ultimately occasions, and under which, it is much less obnoxious to the diseases which are so fatal to new-comers.

We come, in the next place, to the treatment of the remittent fever. The author here offers his remarks on the chief substances employed in this case, and afterwards subjoins his own method. Respecting calomel, he observes, that the uncertainty of its operation forms a strong objection against its use.—Many patients have swallowed some hundred grains without producing any effect at all. When it produced salivation, that very salivation became a very serious disease, and left the patient in a state of dangerous debility. On the disease it never shewed any specific power, and was only useful as a purgative.

Bark, which was frequently prescribed in the remittent, and from which practitioners expected considerable success, was of no use, unless employed in very distinct remissions, which marked a milder form of the disease.

Opium was always found injurious in the beginning of the fever, although restless nights and anxiety tempted the author to prescribe it in large doses. It procured no settled rest; for a time the delirium was increased, to which stupor rather than sleep succeeded; and the next day, languor, irritability, and weakness prevailed. When remissions had commenced, and where a return was apprehended, opium was given freely, and with apparently good effects. It was likewise useful when convulsions took place, and to procure sleep towards the decline of the disease.

Antimonials did not appear to the author, to be of any great service: sometimes they produced perspiration, which afforded temporary relief from the symptoms; but these again returned and continued their course. In one instance, when given in a large dose at the very commencement, the disease seemed to be cut short by their use.

Respecting blood-letting, the author observes that the determinations to particular organs which take place in this disease, and which constitute its greatest danger, the marks of inflammation too which dissection has shewn in the stomach and biliary organs, point out the propriety of this evacuation. Experience confirmed its utility; for the author's practice was much more successful after he adopted blood letting, than before. It is only in the very early stages, however, that he thinks it advisable to have recourse to this operation. If it is not performed as early as the second, or at farthest the third day, he thinks it will not have success. When the morbid action is once begun in consequence of determination, it is not easy by any means to restrain it; but to diminish the bulk, and consequently the momentum, of the circulating mass, is the best means we can employ to prevent its fatal consequences.

Purging the author found rather equivocal in its effects: whilst it seemed to be useful in clearing the bowels of their accumulated contents, it might do harm by determining inwardly, and by increasing the already great irritability of the stomach, a prominent feature of the disease.

The author next considers the effects of warm and cold bathing in the remittent. Dashing of cold water over the patient, was frequently practised, and sometimes with advantage. It was often used, however, in cases where much was expected from it, without success. Where it was happily applied, the general effects observed from it were, an improved recollection, more cheerfulness of aspect, a diminution of heat and anxiety, the pulse becoming more full and equable,

ble, a tendency to sleep, and sometimes a distinct remission. The author thinks this practice will be most usefully employed, where there is much diminution of nervous energy. To heighten the effect, he often premised the warm bath, and whilst the patient was sitting in it, dashed two or three buckets of cold water suddenly on him. In the following case this remedy seemed to effect the cure. Col. H. of the 29th light dragoons, of a thin, spare habit, but active and rather vigorous, soon after he arrived at Port-au-Prince, was seized with the remittent. From the very beginning the vital energies were remarkably overpowered; a delirium commenced with the fever; the pulse was feeble and very quick, the skin dry and locked, and the countenance expressive of anguish and danger. His bowels were emptied, and some buckets of water were exposed to a stream of air in the shade, to render it as cold as possible: he was seated on a chair, at a time he was so feeble, that he trembled all over, and manifested a disposition to faint. In this situation a bucket of water was poured over him; he was then rubbed dry and put to bed; the consequence was, that his pulse became fuller and stronger, his recollection more clear, and his skin relaxed, with a gentle perspiration over it. This state continued till towards evening, when symptoms of a fresh exacerbation appeared. He was again taken to the gallery, and another application of cold water made as before with the same effects. The next day the water was applied three times; on the third, some symptoms of determination to the stomach came on, and some degree of coma, the yellowness too began its appearance, and the pulse became fluttering, quick, and feeble. A large blister was placed over the stomach, and one on each ancle; the cold water was again repeated three times, and at each time two buckets, instead of one, were thrown over him; the effects were remarkable; the pulse became instantly more regular, the vis vitæ was increased, and recollection became

distinct. The blisters rose well, the vomiting ceased, and the danger seemed to be averted from the stomach. The application of the water was repeated in the same manner, the fourth day; the yellowness became deep, but a complete remission took place on the fifth, when the bark was administered to prevent any return of the paroxysm. In the author's own case this mode of treatment seemed to cut short the disease, being applied at the first onset of the symptoms.

The following is the summary of the authors practice in this affection, adopted after considerable experience of its effects.

‘ Whenever I was called to visit a person attacked by the remittent in the manner already described, if there was any inflammatory disposition, or that the patient was a stranger lately arrived, I instantly bled him, in proportion to his strength and the urgency of the case; the quantity can only be ascertained by the circumstances then present, and cannot be regulated but at the patient's bed-side. No directions can be given in words, that would apply to any number of cases, as minute occurrences often guide the physician. I am, however, of opinion, that much depends on the evacuation being liberal at first; if the symptoms do not change, and the pulse retains its vigour, or increases in strength, the evacuation may be repeated next day, but not so freely as on the first. After the blood-letting, the patient was ordered into a warm-bath, and whilst sitting there, half elevated out of the tub, three buckets of cold water were dashed over him; he was then taken out, and well rubbed with a rough dry cloth, and put to bed well covered; and the bed put in such a manner, that no direct draught of air played upon it.

‘ As soon as he was put in bed, an injection was administered, and eight or ten grains of calomel, joined with a scruple of James's Powder, were formed into pills, and one ordered every half hour till their effects were produced; the patient was permitted to
drink

drink freely of lemonade, beef tea, rice or barley water, tamarind water, orangeade, or any light drink that was pleasant to the taste. If the fever did not give way to this treatment, the bath and cold water were repeated again and again, till some impression was made in changing the given circumstances of the body. The pills too were continued, till the bowels were evacuated, and a disposition to looseness was brought on; and the skin released from that hard crusty feel, so unpleasant to the touch. In general, where I could employ the baths, I directed them three times a day, and uniformly found that good effects resulted. When casual symptoms occurred, immediate attention was paid to them. Of all the means used to suppress the excessive vomiting and remove the irritation, I think large blisters early applied are the best; but I imagine, we are in general too late in applying them, and permit the determinations to be formed before we attempt to counteract them, when they are too powerful to be removed, and have already produced their fatal tendency. I think, in every case, where the slightest irritability appears, nay, where there is none, that a blister should be applied over the stomach, so as to prevent the determination to that important organ; for what is the pain or inconvenience of a blister, compared with the security that the application may afford. I would recommend, then, and I actually prescribed a blister to the region of the stomach on the second day; this does not interrupt any part of the treatment. When the vomiting has once commenced, the patient should be directed to swallow as little as possible of any drink whatever; but to moisten the fauces and mouth often, to remove that dryness which conduces so much to the sensation of thirst. It is in vain to prescribe the mildest liquids; the irritability is inconceivable, whatever touches the inner stomach is sure to be rejected with violence; and every time the stomach is thrown into these convulsive motions, the disease is strengthened, and the danger

danger increased. Whenever the nausea and pain appear, fomentations should be applied, and continued frequently, after the blisters are even placed, or risen ; very soft flannel may be employed for this purpose, wrung out of hot water, or decoction of chamomile, of which some entertain a high opinion. All medicines should be laid aside, during the height of the irritation ; neither cordials or sedatives will answer the purpose ; I have never met with any medicine that would for any time remain on the stomach. But above all, we are to refrain from the use of purgatives or antimonials, medicines which produce their effects by exerting their first action on the fibres of the stomach itself, especially calomel and jallap. We are in this stage to trust intirely to injections, and to repeat them often. Broth, and other nourishing liquids, may be thrown into the body in this manner, and the fæces may be removed, by adding irritation to the common emollient injection. If the blisters heal quickly, fresh ones must be applied, and the discharge supported by issue ointment. From this manner of using blisters, I have seen the most beneficial effects result, nor have I used any remedy with more satisfaction and success in removing dangerous symptoms. I do not remember a case, where blisters failed in removing this most dangerous irritability of the stomach, where they were early employed and persisted in. I have also seen blisters singularly useful in the latter stages of the remittent, when the spirits flagged, when there was a disposition to coma, and the pulse was low and fluttering, with that insensibility so often present with such symptoms. In these cases, I have successfully applied blisters to the neck and shoulders, to the ancles and inside of the thighs ; they were not large, but made very strong, so as to act ; and I have seen cases, where I could attribute recovery to them alone. One medicine I must mention, which I have used with good effect after the irritability of the stomach had somewhat abated ; it was
a so-

a solution of white vitriol in pepper-mint water, with the addition of a few drops of laudanum ; I used the proportion of two scruples of the vitriol to six ounces of water and thirty drops of laudanum. Of this mixture, I prescribed a table spoonful every half hour, till the symptoms disappeared. Dr. Jackson used at times portions of burnt alum with good effect. These must act by their astringent power, which is applied in a small bulk, without distending the stomach.—The vessels in the inner coats, previously furcharged and diluted, are thus contracted and strengthened, the distension which made them so irritable is diminished, and they acquire some portion of their former tone and feeling. It is in this manner only, I can account for the good effects of astringents in this state of the stomach.

‘ In the progress of the remittent, especially when remarkable debility occurred, I still persisted in the use of cold water, and generally found that the strength was repaired, the pulse rendered more equable, and the recollection more distinct and more decisive. During the occurrence of this debility, I used camphor, joined with nitre, and sometimes James’s Powder, as I judge, with good effect, in opening the skin ; and where there was any tendency to subsultus, opium was added in considerable doses. If, in spite of these means, the pulse still continued to sink, and the vital energies to diminish, I had recourse to the warmest stimulants, such as æther, brandy, cayenne pepper, brandy baths, &c. It is then of importance to maintain and support the living phenomena, to rouse the dying arteries, and to diffuse stimulus from the grand centre, the stomach. However theory may criticise such practice, experience will justify it, as sometimes successful, and success is the best comment on any mode of treatment. When remissions were obtained, and the disease shewed a disposition to yield, the infusion of the bark and vitriolic acid were prescribed, and continued during the tedious stage of convalescence,

convalescence, when the patient was apt to fall into a number of diseases, arising from the previous derangement and debility of the system.'

From the view of the treatment and its effects that has been now given, it appears, that our means of combating this malady are still far short of our wishes. With regard to blood-letting, on the whole it would seem, that in the early part of the disease, it is one of the best remedies yet adopted, whether by preparing the body for the action of other remedies, or in its own nature preventing dangerous consequences.

A caution is properly suggested respecting the use of blisters in those climates; which is, to guard the seat of them with the utmost vigilance from the flies. The moment the skin is removed, they crowd upon it, and deposit their eggs, which become in this nest a race of maggots, and often form dangerous and deep ulcers, pouring out myriads of these disgusting animals. The patient often feels excruciating pain from their motion, and their efforts to feed on the animal fibre. They cannot be banished without much torture. They form sinuses, into which they retire, and elude the forceps or probe. They resist mercury, spirits, and the strong solution of corrosive sublimate, in all which they support life for hours. The successful and decisive remedy is oil of turpentine, which never fails to kill and banish them, when it has access to their habitations; but it gives intense pain, and almost throws the patient into fits; so that prevention should by all means be attempted.

In an appendix, the author enters on the theory which guided him in his views of the nature and treatment of fever. He remarks justly that we are very little acquainted with the nature of proximate causes, and therefore that practice by indication is, for the most part, amusement, a mere fiction, by which we deceive ourselves and our patient. This is particularly

particularly true of fever. Theories after theories have arisen, and again sunk into oblivion. Foiled in his attempts to establish indications that could be relied on, the author endeavoured to change at once the whole existing circumstances of the system, so as to change the morbid phenomena, and by thus introducing a new order of things, have a better chance of curing the disease. This principle, he thinks, though not acknowledged in terms, has yet guided practitioners in their treatment of many diseases; and he endeavours to illustrate the truth of this, by referring to the practice commonly pursued in intermittents, continued fever, ulcers, lues venerea, and small pox.

‘ Continued fevers, he observes, have been an opprobrium to physicians in all the ages of medicine. The ancients have thrown little light on the subject, nor have the moderns been much more successful. Ingenious systems have been offered and rejected. Theory, which though speculative, often influences the physician, seldom had vigour enough to change practice, because it was commonly rather an effusion of ingenuity, than an induction from just reasoning. On many occasions, theory and practice have been at variance; and in general there was little union between speculation and experience. Cures occurred under the most opposite modes of treatment, and the confidence which this casual success inspired, gave currency to particular remedies.

‘ The ancients, in their cure of fevers, for a long period, continued the strenuous imitators of their predecessors, without aspiring to truth or novelty. The remote causes of fever, are undoubtedly obscure, but above all, the proximate cause, or what more immediately exhibits the morbid phenomena, has eluded every research. It is useless to repeat the various conjectures which at different periods occupied the medical world; it is sufficient to remark, that none have ever led to a decisive, or certain cure.

‘ Fevers,

Fevers, of the continued form, assume at times the type of intermittents ; that is, there appears a certain degree of abatement in the symptoms at stated times ; but they again resume their wonted course, in periods corresponding with the returns of certain paroxysms. This is the most frequent type at least. But whether this depends on something in the constitution which determines the return of the fever, or on the operation of powerful causes, is not known. But there are continued fevers in which no perceptible abatement is evident, and they run through their whole course without suffering any visible or apparent change in the severity of the symptoms. The operation of the proximate cause in continued fevers, is steady and powerful ; and seems as yet, to have bid defiance to all the suggestions of theory, or the dreams of credulity. On a survey of the practice which has obtained in continued fevers, through all the æras of medicine, I confess, that in my mind, it has been uniformly too feeble. The practice of the Indians in America, appears to me to possess more vigour, and to be more likely to do good, than all the systems as yet promulgated by the schools of physic. Whatever the proximate cause may be, which produces the morbid action, and exhibits the phenomena of fever, it seems to be tenacious, and to keep possession with wonderful perseverance. Such a cause is not easily moved ; powers which produce slight changes, are not likely to affect it : bold and decisive practice must be adopted before we can do any thing ; and as we cannot pitch on the weak part, for the play of our engines, let the whole system be stormed at once, and the disease banished by a powerful invasion. From the want of this energy in practice, and the influence of idle theories, the treatment of fever has been feebly conducted : nor has it ever been clearly proved, although affirmed by credulous or dishonest practitioners, that the course of a fever was really cut short by these tame operations. It is at least probable, that the proximate causes

causes of disease are only to be removed by the introduction of counter-movements, which effect a general difference in the action of the whole system, or its parts. Now we see, that the practice in fever for a period of two thousand years, had not introduced changes sufficiently powerful, to remove with certainty the operations of the proximate cause. The morbid action, we must conclude, is very powerful; it does not seem, on any occasion, to give way to feeble opposition. Slight attempts avail nothing; in such cases there is room for innovation. If we are persuaded that sudden changes or revolutions are proper, let them possess energy to effect their purpose. The prejudices of mankind, and the fears of practitioners, oppose this general scheme of treatment; but I have no doubt, but the bold physician will be crowned with frequent and unexpected success.

‘ I have often seen remarkable effects from sudden changes, applied in such a manner, as to alter the whole circumstances of the habit. When we see a fever obstinately resisting ordinary means, and sweeping, without distinction, the toiling race of man; is it not then incumbent on us to vary our means, and increase the chance of success by multiplied efforts? In such disasters, any new plan can hardly be less successful than the old one; and experiment may at length put us in possession of a better method. All our present knowledge must have at first arisen from chance trials. It is from experience alone, that principles can be deduced, or enlarged; that hints can be extracted, which, prosecuted by further enquiry, may become the basis of systems. Investigation is slow and laborious; we generalize and extend from small beginnings; but the philosopher is rewarded by the discovery of truth; by conferring on mankind useful benefits.

‘ From the great mass of casual experience a selection is made, which may serve to enlighten posterity. The method of practice, by inducing a revolution
or

or change in the habit and constitution, and thus banishing morbid action, extends our views, and gives a scope to the physician, which he could not otherwise attain. This doctrine applies to a number of diseases, and gives a new foundation to practice, when indication wholly fails. I shall shew, in a few instances, its direct application to other disorders, where the practice by indication could have no place; as the proximate cause was wholly unknown.

‘ In the remarkable history related by Kaw Boerhaave of the powers of irritation and sympathy, we see a wonderful instance of the force of terror in changing a morbid action, that had established itself fully in the system. The striking figure of Boerhaave, his solemn, awful deportment, his determined manner, impressed fear and excited movements in the system, which banished and conquered the influence of the morbid cause. This memorable history confirms very strongly the reasoning on morbid action, and the manner of changing it, by sudden and powerful means; for in no other way could the mere appearance of Boerhaave produce the effect. The surprize, however, and impressions of fear, by altering the movements of the system, banished morbid, and restored the healthy movements of the constitution.

‘ There are numerous cases on record, where sudden and powerful revolutions have wonderfully affected the body. In Lord Anson’s voyage, it is related, that on one occasion great numbers were prostrated by the scurvy. A ship, however, came suddenly in sight, supposed to be an enemy; the men were roused, and became eager for battle. The appearance of disease greatly abated, and they seemed, as it were, to have at once recovered. They afterwards relapsed. The effects of surprize and novelty banish an obstinate hiccup.

‘ Now there is nothing in these cases particularly directed against any individual effect of the morbid cause; the whole action of the system is suddenly changed, and in this manner the morbid action is banished.

banished. It has been remarked by almost every one who has ever followed an army, that men languish and become sickly in easy quarters, but recover very rapidly when their powers are awakèned, by the approach of danger, or by the expectation of an enemy.

I shall now record an instance of the astonishing effects of sudden changes, or powerful movements in the system. When I was proceeding to Bombay, in the Middlesex East Indiaman, a continued fever broke out on board, which attacked great numbers, though very few died. We touched at the Cape of Good Hope, for refreshments, and proceeded on our passage. The fever still continued to affect the seamen, and they lingered under it for weeks. When we came, however, to latitude $36^{\circ} 19' S$ eight or ten of the people had very unfavourable symptoms. Next day, a violent gale arose, with a tremendous, tumultuous sea, agitating our ship with rapid and uncommon motion. It exceeded in violence all the storms and tempests, the oldest men amongst us could remember. It was wholly out of my power for two days, to visit the sick, or give them any assistance. When I ventured among them on the third day, I expected to have found several dead, and the others much worse. They had hardly received any nourishment, and little attention of any kind, during the continuance of the gale. But how great was my astonishment to find, when I visited them, that they were all free of fever, and complained only of debility. The course of the fever had been entirely stopped. No one will here argue, that there was any prescription, founded on direct, precise indication; the morbid action, which previously existed, was changed by very powerful movements in the system. The dreadful agitation of the ship appears the chief agent, which by a continuance of three days, could not fail to bring on important changes. Fear, hope, and a variety of strong emotions, must have alternately prevailed. Sudden changes, then, have in many instances produced cures, by altering at

once the whole given circumstances and condition of the body; and by introducing a set of movements totally different, until the system at length adopts its usual and salutary action. This is in no way founded on partial indication, or any individual effect of the morbid power. I am not acquainted with any indication in continued fever, that would lead me to be in any measure confident of success. We sometimes obviate pressing symptoms, and remove stimuli, which might support irritation; and we endeavour to support the vigour of the vital powers, until some change may happen; and this comprizes all our knowledge in the treatment of fever. In such cases, I should be strongly inclined to pursue bolder means, and endeavour to change the phenomena. It is, however, evident, that most physicians have aimed, in the treatment of continued fever, to bring on sudden changes in the habit, without consulting lesser indications. Whilst the doctrines of the venerable Cullen prevailed, the removal of spasm, and, the giving of tone, were the great views of practitioners.'

Besides the remittent fever, and subjects immediately connected with it, of which we have now given a concentrated view, the volume contains much miscellaneous matter; important enough certainly but too local in their object, and partaking too much of oeconomic regulation, to admit of abridgement in this place.

ART. LX. *Philosophical Transactions of the Royal Society of London. Part II. for the Year 1797.*
ELMSLEY.

Art. 17th of this Collection, is a Paper on Gouty and Urinary Concretions. By William Hyde Wollaston, M. D.

IF in any case, the author observes, a chemical knowledge of the effects of diseases will assist us in the cure of them, in none does it seem more likely to be of service than in the removal of the several concretions that are formed in various parts of the body. Of these, one species from the bladder has been thoroughly examined by Scheele, who found it to consist almost entirely of a peculiar concrete acid, which, since his time, has received the name of *lithic*. The paper of Dr. Wollaston contains an account of the analysis of gouty concretions, and of four new urinary calculi.

The gouty matter, from its appearance, was originally considered as chalk; but from being found in an animal not known to contain or secrete calcareous earth, uncombined with phosphoric acid, it has since been supposed to resemble earth of bones. Dr. Cullen has even asserted, that it is 'very entirely' soluble in acids. The assertion, however, is by no means generally true; and the author thinks, the professor must have used the nitrous acid, for he finds no other that will dissolve it.

Another opinion, prevalent at this time, is that it consists of lithic acid, or matter of the calculus described by Scheele. But this idea is not founded on direct experiments. From the author's examinations, it appears to be a neutral compound, consisting of lithic acid and mineral alkali.

(1) If a small quantity of diluted vitriolic acid be poured upon the chalk-stone, part of the alkali is ex-

tracted, and crystals of Glauber's salt may be obtained from the solution. Common salt may still more easily be procured by marine acid. The addition of more acid will extract the whole of the alkali, leaving a large proportion of the chalk-stone undissolved: which exhibits the following characteristics of lithic matter.

(a) By distillation it yields a little volatile alkali, Prussic acid, and an acid sublimate, having the same crystalline form as the sublimate observed by Scheele.

(b) Dissolved in a small quantity of diluted nitrous acid, it tinges the skin with a rose-colour; and when evaporated leaves a rose-coloured deliquescent residuum.

(c) It dissolves readily in caustic vegetable alkali, and may be precipitated from it by any acid, and also by mild volatile alkali; first as a jelly, and then breaking down into a white powder.

(2) In distillation of the chalk-stone the lithic acid is decomposed, and yields the usual products of animal substances, *viz.* a fetid alkaline liquor, volatile alkali, and a heavy fetid oil, leaving a spongy coal; which, when burnt in open air, fuses into a white salt, that does not deliquesce, but dissolves in water, is alkaline, and when saturated with nitrous acid, gives rhomboidal crystals.

These characteristic properties prove it to be mineral alkali.

(3) Caustic vegetable alkali poured upon the chalk-stone, and warmed, dissolves the whole without emitting any smell of volatile alkali. From which it appears, that the volatile alkali obtained by distillation, is a product arising from a new arrangement of elements, not so combined in the substance itself.

(4) Water, aided by a boiling heat, dissolves a very small proportion of the gouty concretion, and retains it when cold. The lithic acid thus dissolved in combination with the alkali, is rather more than would be dissolved alone; so that by addition of marine
rine

rine acid it may be separated. While the solution continues warm, no precipitate is formed ; but as it cools, the lithic acid crystallizes on the sides of the vessel, in the same manner as the crystals called red sand do, when an acid is added to recent urine.

The gouty concrete may be easily formed, the author remarks, by uniting the ingredients of which it consists.

(5) If a fragment of lithic acid be triturated with some mineral alkali and a little warm water, they unite ; and after the superfluous alkali has been washed out, the remainder has every chemical property of gouty matter.

The acid will not sublime from it, but is decomposed (2) by heat: the alkali may be extracted by the vitriolic or marine, (1) or, indeed, by most acids.—The compound requires a large quantity of water for its solution, (4) and while warm, the solution yields no precipitate by the addition of an acid ; but upon its cooling, the lithic crystals form, as in the preceding experiment.

In each case, the crystals are too small for accurate examination ; but the author has observed, that by mixing a few drops of caustic vegetable alkali to the solution previous to the decomposition, they may be rendered somewhat larger. At the first precipitation, the crystals from gouty matter were not similar to those of lithic acid ; but by re-dissolving the precipitate in water, with the addition of a little caustic vegetable alkali, and decomposing the solution as before, while hot, the crystals obtained were perfectly similar to those of the lithic acid procured by the same means.

Such, then, are the essential ingredients of the gouty concretions. But there might probably be discovered, by an examination of larger masses than I possess, some portion of common animal fibre or fluids intermixed ; but whatever particles of heterogeneous matter may be detected, they are in far too small

proportions to invalidate the general result, that 'gouty matter is lithiated soda.'

The knowledge of this compound may lead to a further trial of the alkalies which have been observed by Dr. Cullen to be apparently efficacious in preventing the returns of this disease; (First lines, DLVIII.) and may induce us, when correcting the acidity to which gouty persons are frequently subject, to employ the fixed alkalies, which are either of them capable of dissolving gouty matter, in preference to the earths, (termed absorbent) which can have no such beneficial effect.

Fusible Calculus.

The next subject of enquiry, was a species of calculus, that was first ascertained to differ from that of Scheele, by Mr. Tennant; who found, that when urged by the heat of a blow-pipe, instead of being nearly consumed, it left a large proportion fused into an opaque white glass, which he conjectured to be phosphorated lime, united with other phosphoric salts of the urine, but never attempted a more minute analysis.

Stones of this kind are always whiter than those described by Scheele, and some specimens are perfectly white. The greater part of them have an appearance of sparkling crystals, which are most discernible where two crusts of a laminated stone have been separated from each other.

The author lately had an opportunity of procuring these crystals alone, voided in the form of a white sand, and thence of determining the nature of the compound stone, in which these are cemented by other ingredients.

The crystals consist of phosphoric acid, magnesia and volatile alkali: the stone contains also phosphorated lime, and generally some lithic acid.

The

The form of the crystals is a short trilateral prism, having one angle a right angle, and the other two equal, terminated by a pyramid of three or six sides.

(6) By heat the volatile alkali may be driven off from the crystals, and they are rendered opaque, (or may be partially fused). The phosphorated magnesia may then be dissolved in nitrous acid; and by addition of quicksilver dissolved in the same acid, a precipitate of phosphorated quicksilver is obtained, from which the quicksilver may be expelled by heat and the acid procured separate. By addition of vitriolic acid to the remaining solution, Epsom salt is formed and may be crystallized, after the requisite evaporation of the nitrous acid, and separation of any redundant quicksilver.

(7) These crystals require a very large quantity of water for their solution, but are readily soluble in most, if not all acids; *viz.* vitriolic, nitrous, marine, phosphoric, saccharine, and acetous; and when precipitated from them, re-assume the crystalline form.

(8) From the solution in marine acid, sal ammoniac may be obtained by sublimation.

(9) Although the analysis is satisfactory, the synthetic proof is, if possible, still more so. After dissolving magnesia in phosphoric acid, the addition of volatile alkali immediately forms the crystalline precipitate, having the same figure and properties as the original crystals.

(10) If volatile alkali be cautiously mixed with recent urine, the same compound will be formed; the first appearance that takes place when a sufficient quantity of alkali has been gradually added, is a precipitate of these triple crystals.

These constitute the greater part of the fusible stone; so that a previous acquaintance with their properties is necessary, in order to comprehend justly the nature of the compound stone in which they are contained.

The most direct analysis of the compound stone is effected by the successive action of distilled vinegar, marine acid, and caustic vegetable alkali.

(11) Distilled vinegar acts but slowly upon the calculus when entire; but when powdered, it immediately dissolves the triple crystals, which may be again precipitated from it as crystals by volatile alkali; and if the solution has not been aided by heat, scarcely any of the phosphorated lime will be found blended with them.

In one trial, the triple crystals exceeded $\frac{6}{10}$ of the quantity employed; but it seemed necessary to determine the exact proportion which they bear to the other ingredients in any one instance, as that proportion must vary in different specimens of such an assemblage of substances not chemically combined.

Marine acid poured upon the remainder, dissolves the phosphorated lime, leaving a very small residuum.

This is soluble in caustic vegetable alkali entirely, and has every other property of mere lithic acid.

The presence of volatile alkali in the compound stone may be shewn in various ways.

(12) In the distillation of this stone there arises, first, volatile alkali in great abundance, a little foetid oil, and lithic acid. There remains a large proportion charred. Water poured upon the remaining coal, dissolves an extremely small quantity of a salt, apparently common salt, but too minute for accurate examination. Distilled vinegar dissolves no part of it, even when powdered. Marine acid dissolves the phosphorated lime and phosphorated magnesia, leaving nothing but a little charcoal. From this solution, vitriolic acid occasions a precipitate of selenite; after which triple crystals may be formed by addition of volatile alkali.

(13) Marine acid also acts readily upon a fragment of the stone, leaving only yellowish laminæ of lithic acid. When the solution has been evaporated to dryness, sal ammoniac may be sublimed from it; and the two phosphorated earths are found combined with more or less of marine acid, according to the degree of heat applied. If the proportion of the
earth

earth is wished to be ascertained, acid of sugar will separate them most effectually, by dissolving the phosphorated magnesia, and forming an insoluble compound with the lime.

(14) Caustic vegetable alkali has but little effect upon the entire stone; but if heated upon the stone in powder, a strong effervescence takes place from the escape of alkaline air, and the menstruum is found to contain lithic and precipitable by any other acid. Some phosphoric acid also from a partial decomposition of the triple crystals, is detected by nitrated quicksilver.

(15) The triple crystals alone are scarcely fusible under the blow pipe; phosphoric lime proves still more refractory; but mixtures of the two are extremely fusible, which explains the fusibility of the calculus.

The appearance of the lithic strata, and the small proportion they bear to the other ingredients, shews that they are not an essential part, but an accidental deposit that would be formed on any extraneous substance in the bladder, and which probably in this instance concretes during any temporary interval that may occur in the formation of the crystals.

Mulberry Calculus.

This stone, though by no means overlooked, has not been subject to any farther analysis than has been given in the 2d vol. of the Medical Transactions, by Dr. Dawson, who found that his lixivium had little or no effect upon it; and in the Philosophical Transactions, by Mr. Lane, who, among other simple and compound stones, gives an account of the comparative effects of lixivium and heat upon a few specimens of mulberry calculus; but neither of these writers attempted to ascertain the constituent parts.

Though the name has been confined to such stones, as from their irregularly knotted surface and dark colour, bear a distant resemblance to that fruit, Dr.
Wollaston

Wollaston finds the species chemically considered, to be more extensive, comprehending also some of the smoothest stones we meet with, of which one in my possession is of a much lighter colour, so as to resemble in hue as well as in smoothness, the surface of a hemp-seed. From this circumstance it seems not improbable, that the darkness of irregular stones may have arisen from blood voided in consequence of their roughness.

The smooth calculus, the author finds to consist of lime united with the acids of sugar and of phosphorous. The rougher specimens have generally some lithic acid in their interstices.

(16) Caustic vegetable alkali acquires a slight tinge from a fragment of this stone, but will not dissolve it. When powdered it is thereby purified from any quantity of lithic acid that it may contain. Phosphoric acid will then dissolve out the phosphorated lime, and the remainder after being washed, may be decomposed by the vitriolic. The affinity of this acid for a certain proportion of lime, is superior even to that of acid of sugar; selenite is formed, and the acid of sugar may be crystallized, and by the form of its crystals recognized, as well as by every other property. It is easily soluble, occasions a precipitate from lime-water, and from a solution of selenite, and with mineral alkali forms a salt that requires a larger quantity of water for its solution.

(17) When the stone has been finely powdered, marine acid will slowly dissolve all but any small quantity of lithic matter which it may contain. After the solution has been evaporated to dryness, no part is then soluble in water, the marine acid being wholly expelled. When the dried mass is distilled with a greater heat, the saccharine acid is decomposed; and a sublimate formed, still acid and still crystallizable, but much less soluble in water, and which does not precipitate lime from lime-water. After distillation the remainder contains phosphorated lime, pure lime, and charcoal, and when calcined in the open air, the charcoal

charcoal is consumed and the whole reduced to a white powder. The two former may be dissolved in marine acid, which when evaporated to dryness will be retained only by the lime; so that water will then separate the muriated lime, and the phosphorated may afterwards be submitted to the usual analysis.

Bone-earth Calculus.

Beside that of Scheele, and the two already noticed, there is also, the author observes, a fourth species of calculus occasionally formed in the bladder, distinct in its appearance, and differing in its component parts from the rest; for it consists entirely of phosphorated lime.

Its surface is generally of a pale brown, and so smooth as to appear polished; when sawed through, it is found very regularly laminated; and the laminae in general adhere so slightly to each other, as to separate with ease into concentric crusts. In one specimen furnished by Dr. Baillie each lamina is striated in a direction perpendicular to the surface, as from an assemblage of crystallized fibres.

This calculus dissolves entirely, tho' slowly, in marine or nitrous acid, and, consisting of the same elements as earth of bones, may undergo a similar analysis, which it is unnecessary to particularize.

By the blow-pipe it is immediately discovered to differ from other urinary calculi: it is at first slightly charred, but soon becomes perfectly white, still retaining its form, till urged with the utmost heat from a common blow-pipe, when it may at length be completely fused. But even this degree of fusibility is superior to that of bones. The difference consists in an excess of calcareous earth contained in bones, which renders them less fusible, this redundant portion of lime in bones renders them also more readily soluble in marine acid, and may, by evaporation of such a solution, be separated, as in the last experiment upon mulberry calculus. The remaining phosphorated lime may be dissolved

solved by a fresh addition of marine acid; and being now freed from redundant lime, will upon evaporation of the marine acid, assume a crystalline form, as the laminated calculus contains no excess of lime, that will at once yield such crystals: their appearance is described in the succeeding experiment.

Calculus from the Prostate Gland.

There is still another calculus of the urinary passages, tho' not of the bladder itself, which deserves notice, not from the frequency of its occurrence, but from having been supposed to give rise to stone in the bladder. They are usually of the size of the smallest pins head, to that of pearl barley, in colour and transparency like amber. These the author finds to be phosphorated lime in the state of neutralization, tinged with the secretion of the prostate gland.

(18) A small fragment being put into a drop of marine acid, on a piece of glass over a candle, was soon dissolved; and upon evaporation of the acid, crystallized in needles, making angles of about 60° and 120° with each other.

Water dropped on the crystals would dissolve no part of them; but in marine acid they would re-dissolve, and might be re-crystallized.

(19) Vitriolic acid forms felenite with the calcareous earth.

(20) By acid of nitrated quicksilver, phosphoric acid is readily obtained.

(21) When heated, this calculus decrepitates strongly; it next emits the usual smell of burnt animal substances, and is charred, but will not become white though partially fused. It still is soluble in marine acid, and will in that state crystallize more perfectly than before. Hence, the author concludes, that these stones are tinged with the liquor of the prostate gland, which, in their original state, (18) somewhat impedes the crystallization.

This

This crystallization from marine acid is so delicate a test of the neutral phosphorated lime, that he has been enabled by that means to detect the formation of it, although the quantities were very minute. The particles of sand which are so generally to be felt in the pineal gland, have this for their basis; for after calcination, they crystallize perfectly from marine acid.

The author has likewise met with the same compound in a very pure state, and soft, contained in a cyst under the pleura costalis.

On the contrary, ossifications (properly so called) of arteries, and of the valves of the heart, are similar to earth of bones, in containing the redundant calcareous earth; and he believes, also, those of veins, of the bronchial, and of the tendinous portions of the diaphragm, have the same excess.

To these may also be added the incrustation frequently formed upon the teeth, which, in the only two specimens the author examined, proved to be a similar compound, with a very small excess of lime.

From these facts, Dr. Wollaston deduces the following inferences:

The sand from the pineal gland, from its frequency hardly to be called a disease, or when amounting to disease, most certainly not known by its symptoms, would, at the same time, if known, be wholly out of the reach of any remedy.

The calculi of the prostate are too rare, perhaps, to have been ever yet suspected in the living body, and are but indirectly worthy of notice. For if, by chance, one of them should be voided with urine, a knowledge of its source would guard us against an error we might otherwise fall into, of proposing the usual solvents for urinary calculi.

The bone-earth calculus, although so nearly allied to the last, is still manifestly different, and cannot be supposed to originate from that source; but if ever the drinking of water, impregnated with calcareous earth, gave rise to a stone in the bladder, this would
most

most probably be the kind generated, and the remedy must evidently be of an acid nature.

With respect to the mulberry calculus, an intimate knowledge of its properties leaves but small prospect of relief from any solvent ; but by tracing the source of the disease, we may entertain some hopes of preventing it. As the saccharine acid is known to be a natural product of a species of oxalis, it seems more probable that it is contained in some other vegetables, or their fruits taken as aliment, than produced by the digestive powers, or secreted by any diseased action of the kidneys. The nutriment would therefore become a subject of minute inquiry, rather than any supposed defect of assimilation or secretion.

When a calculus is discovered, by the evacuations, to be of the fusible kind, we seem to be allowed a more favourable prospect in our attempts to relieve : for here, any acid that is carried to the bladder will act upon the triple crystals, and most acids will also dissolve the phosphorated lime ; while alkalies, on the contrary, would rather have a tendency to add to the disease.

Although, from want of sufficient attention to the varieties of sediment from urine, and want of information with regard to the diversity of urinary calculi, the deposits peculiar to each concretion are yet unknown ; it seems probable, that no long course of observations would be necessary to ascertain with what species any individual may be afflicted.

The lithic, which is by far the most prevalent, fortunately affords us great variety of proofs of its presence. Particles of red sand (as they are called) are its crystals. Fragments, also, of larger masses, and small stones, are frequently passed ; and it is probable, that the majority of appearances in the urine, called purulent, are either the acid itself precipitated too quickly to crystallize, or a neutral compound of that acid with one of the fixed alkalies.

Besides

Besides this species, the fusible calculus afforded decisive marks of its presence, in the case which furnished the author with his specimen of triple crystals, where it was voided as a fine white sand; and by the description given by Mr. Forbes, (in his Treatise upon Gravel and Gout, ed. 1793, p. 65,) of a white crystallized precipitate, he entertains no doubt, that the patient laboured under that variety of the disease.

ART. LXI. *De la Medecine Operatoire, ou des Operations de Chirurgie qui se pratiquent le plus frequemment. A Treatise on Operative Medicine, or on the most common Operations in Surgery. By SABATIER, Surgeon in Chief to the National Hospital of Invalids, &c. Paris, 1796. 3 Vol. Octavo, price 18s. Imported by BOOSEY, London.*

NO one will question the utility of comprizing, from time to time, in one compendious system, the widely-scattered facts belonging to an extensive and advancing science, which chance or the labour of individuals has brought to light. Besides the advantage accruing to the student from thus bringing into a contracted view the various objects of his research, the order and perspicuity with which they are arranged, contribute not a little to fix them in the memory. The frequency with which these general revisions of any art or science become necessary, must altogether depend on the progressive advances it has undergone. We very lately had occasion to notice a system of surgery in the French language, from the pen of M. Lassus*, a work, which in a great measure, might supersede the necessity of the present publication; but M. Sabatier informs us, his volumes were already in the press, when the system of his

colleague made its appearance in the world. The known talents and opportunities, however, of both these celebrated men, will stamp a value on each of their writings, which examination of their merits will, no doubt, confirm.

The present volumes treat only of the operations on the soft parts: the diseases of the bones are intended to furnish the subject to another work. The following is the order the author has adopted: he speaks first of the operations practised on the abdomen; including wounds, rupture, ascites, hydrocele, abscess in the liver, the cæsarian section, polypus of the vagina and uterus, castration, and the other operations on the organs of generation, lithotomy, retention of urine, abscess and fistula in ano, and hæmorrhoids.

The next general head includes the diseases of the thorax and neck, requiring operations: as wounds, empyema, hydrothorax, cancer of the breast, bronchotomy. Next, the operations practised on the head: as wounds, fractures of different kinds, fistula lachrymalis, cataract, and other affections of the eyes, polypus of the nose, fistulous openings of the parotid gland and duct, hare lip, tumours under the tongue, excision of the amygdalæ and uvula.

The operations on the extremities are next described, including aneurism and amputation.

Under the last head, are included those operations which may become necessary, indifferently on any part; as in wounds in general; gun-shot wounds; those of blood vessels, and lymphatics; extraction of foreign bodies; and opening of abscesses.

M. Sabatier has not confined himself to the exposition of the principles of the art, and the relation of his own mode of operating; but has, with great industry, adduced the opinions and practice of the older surgeons; that the student may be able to compare the ancient with the modern, and learn the reasons

on

on which the present improvements in surgery are founded.

The pathological remarks are full and interesting.

ART. LXIII. *Outlines of a course of Lectures on Chemistry.* By T. GARNETT, M. D. Professor of Physics and Philosophy in Anderson's Institution, Glasgow, &c. Octavo, 176 pages, price, 4s. CADELL and DAVIES, London, 1797.

LITTLE need be said to point out the importance of chemical knowledge in a general view; to those engaged in the study and practice of medicine it is indispensable. To the apothecary, the author observes, an extensive knowledge of this science is requisite, to enable him to understand what alteration the substances which he employs may undergo, and when necessary, to prevent or correct them; and that he may know the combinations and decompositions which take place when different drugs are mixed together. Numerous mistakes have arisen from a want of knowledge of chemical combination and decomposition in the preparation of medicines. Chemistry is not less useful to the physician than to the apothecary, as it enables him to prescribe with prudence and success, and to apply with advantage those powerful remedies, which the practitioner ignorant of chemistry, administers with a timid and uncertain hand.

The present pamphlet is something more than a text-book for the use of students in chemistry; the author has been induced to publish it, in the hope of its being an useful remembrancer to such as have made some proficiency in this science; a purpose which it appears sufficiently well calculated to answer.

N n As

As a specimen of the author's manner of treating his subject, we select his remarks on animal matter, and on fermentation.

Animal substances differ from vegetable, principally in the following circumstances. First, they afford a considerable portion of ammoniac, and very foetid products by the action of fire. Second, they putrefy more easily and speedily, giving out a much worse smell. Third, they yield when acted on by the nitric acid, a much greater quantity of azotic gas, and lastly, they contribute singularly to the formation of nitric acid.

These differences seem to depend on animal bodies being possessed of one substance in much greater abundance than vegetables, viz. azote. Besides these circumstances, in which animal substances differ from vegetable, the former generally contain a quantity of phosphoric acid and calcareous earth.

The principal animal fluids are, first, the blood, which consists of three immediate materials, or principles, the serum, the crassamentum, or coagulable part, and the colouring part, or red globules, as they are called. Second, milk, which is the least animalized of all the fluids, and consists likewise of three immediate materials, serum, or whey, butter, and cheese. Third, the bile, which is a saponaceous fluid consisting chiefly of an animal oil, combined with soda. Fat is nothing but an animal oil in a coagulated state.

The substances which compose the solid parts of animals may likewise be divided into three immediate materials, or principal genera; first, albumen; second, gelatin; third, fibrin, or fibrous matter. These three substances in a state of concretion and combination, form all the solids of animals, and are separable from each other by an easy analysis. These different immediate principles are particularly examined in the lecture.

By whatever means we deprive animal substances of their azote, we reduce them to substances resembling

sembling vegetables; the muscular fibre excluded from the contact of the air, but particularly if in contact with water, parts with its azote and is converted into a substance resembling spermaceti, which in its analysis, agrees with the common expressed oils of vegetables.

When vegetables and animals are deprived of life, movements are excited in them which destroy their textures and alter their composition: these movements constitute the different kinds of fermentation.

When the saccharine principle is predominant in vegetables, the product of fermentation is a spirituous or vinous liquor; when mucilage is predominant, the product is an acid, and if the gluten should prove most abundant, the fermentation will be of the putrefactive kind. Hence it is evident that vegetable substances may successively experience all the different kinds of fermentation.

When vegetable substances, particularly saccharine matters, are fixed in proper quantity with water, and exposed to a gentle heat, the water becomes decomposed; its oxygen combines with the carbon of the vegetable, forming carbonic acid, which is disengaged in a large quantity during fermentation: at the same time, the hydrogen of the water uniting with the mucilage, forms alcohol, which being mixed with water, and part of the carbon of the saccharine matter, together with extractive and colouring matter, is called wine. The alcohol may be separated from these matters by distillation with a gentle heat. Pure alcohol appears to be hydrogen in a liquid state, combined with a small quantity of carbon, which most probably causes its fluidity; for we find that the more we deprive it of its carbon, the nearer it approaches to the state of hydrogen gas. Ether seems to be hydrogen, combined with much less carbon. It is convertible into gas with a gentle heat, which very much resembles hydrogen gas in its properties.

The acid fermentation is the next natural movement, which contributes to reduce vegetable compounds

pounds to more simple states of composition. After vegetables have passed through this state, their decomposition continuing under favourable circumstances, leads to the decomposition of the last principle, the gluten, which terminates in volatilizing most of their principles in the form of gas; after this, nothing remains but a brown or black residuum, called mould, composed of carbon, some salts, a little oil, and extractive matter.

When animal substances, deprived of life, are exposed to the air, their component parts soon become altered by more simple attractions between their principles, which have a tendency to unite two and two together. In the union of hydrogen and azote, we perceive the formation of ammoniac, the combination of carbon with oxygen, explains the evolution of carbonic acid. Nitric acid arises from the union of oxygen and azote. A quantity of hydrogen is extricated in the form of gas, carrying off with it sulphur and phosphorus, which causes the disagreeable smell that attends animal putrefaction; nothing now remains but a portion of carbon mixed with phosphat of soda and phosphat of lime.

Hence we see, that by the processes of fermentation and putrefaction, complex bodies are converted into substances less compound; and that nature restores in the new combinations that are formed, the principles she had borrowed from the atmosphere for the formation of animals and vegetables; and thus she accomplishes the perpetual circle of compositions and decompositions, which demonstrates her fecundity. while it announces equal grandeur and simplicity in her operations.

THE

MEDICAL and CHIRURGICAL
REVIEW.

MAY, 1798.

ART. LXIII. *Medical Reports of the Effects of Water, Cold and Warm, &c: &c.* By JAMES CURRIE, M. D.

(Continued from page 416.)

CHAP. 15th commences with some observations on animal heat and its origin. The property of preserving nearly the same degree of heat under various external temperatures, is considered as the most characteristic property of life; and the degree of this capacity, the author thinks, may be taken as the criterion of the strength of the living principle.

Some physiologists have of late supposed, that the skin performs an office similar to the lungs, decomposing and inhaling oxygen, and thus contributing to the production of animal heat. But experiments are wanting, Dr. Currie observes, to establish this position, or to shew us how far it extends; and there is reason to believe that the principal function of the skin, in the breathing animals at least, is of a different and opposite nature. That the action of the cutaneous vessels, by inducing perspiration, and the evaporation which follows absorbing heat, contri-

butes to lower the living temperature when in excess, is sufficiently ascertained. The process of perspiration, which is continually going on from every part of the body, is in this point of view the converse of that of respiration; as in respiration a gas is constantly converted into a solid or fluid, and thus heat evolved, so in perspiration a fluid is continually converted into a vapour, and thus heat is absorbed. If then we suppose, that while the proportion of oxygen received into the system continues the same, the temperature of the atmosphere is increased, we can understand why our heat is not increased, by supposing an increase of perspiration. And if the temperature of the atmosphere remains unchanged, while the oxygen received by the lungs is increased, we can still explain the stability of our heat, by supposing an increase of perspiration. Thus perspiration appears to have a principal share in regulating the animal heat, and the chain of life seems connected with the physical world by two links, which the recent discoveries in chemistry enable us to comprehend.

But whatever may be the influence of the insensible perspiration in cooling the body, it does not seem, the author remarks, to be the only process by which this effect is produced. From some experiments in the hot bath, it appears to him that the temperature of the body is with difficulty increased after the sweat begins to flow profusely; and as there can be no evaporation from the skin when the body is immersed in water, it seems to shew, that in the production of sweat itself, a degree of heat is absorbed, and thus explains in some degree the reduction of heat that follows profuse perspiration in other cases. It was supposed by Albinus, Haller, and William Hunter, that the sweat as well as the insensible perspiration, is an exudation of the watery part of the blood through the cuticle; but this opinion is contrary to all analogy, and, depending on experi-

experiments made on the dead body, may be safely rejected. The opinion of Dr. Fordyce and Mr. Cruikshank seems to be the true one. The matter of perspiration is separated from the blood by the capillary arteries, and thrown out on the surface by organic pores in the cuticle, (however difficult to be discovered) connected with the extremities of these arteries; and in this process there is not a separation merely, but a new combination, as in similar instances. In this combination there may be an absorption of heat, and thus the coolness produced by sweating be in part accounted for. The absorption of heat may, however, take place in various other processes, besides the production and evaporation of perspirable matter; as doubtless its extrication takes place in various other processes, besides respiration; and after all, the sudden changes of temperature that take place in certain circumstances, render it probable that the animal possesses powers over its heat not yet understood, and which no chemical theories can explain.

The following observations on the operation of opium and of alcohol in fevers are judicious, and mark the attentive practitioner.

‘When opium is given in fever,’ Dr. Currie remarks, ‘if the heat be two or three degrees or upwards above the natural standard, and the skin dry, it seems very generally to increase the heat and restlessness. There are exceptions. If the heat, though præternaturally great, is subsiding, and the skin beginning to soften, though not yet moist, opium very often accelerates the perspiration, and by this means diminishes the heat. In such cases its salutary effects generally follow—tranquility and sleep. Thus it will happen, that an anodyne draught given early in the evening shall occasion increased heat and agitation, which, if deferred till two or three in the morning, would have produced perspiration and repose. In the evening

the exacerbation of fever is on the increase or at its height, which towards morning is subsiding, the difference in the actual heat of the surface being often not less than two degrees or upwards. A dose of opium given in the hot stage of intermittent fever, will often accelerate the sweating stage, and shorten the paroxysm, which, under similar circumstances in continued fever, has a contrary effect; because in the former case the disposition to perspire is more easily excited. But even in intermittent fever, opium when given in the hot stage, will be much promoted in its diaphoretic and salutary effects, by moderate draughts of tepid, or if the heat be great, of cold liquids. In continued fever where the heat is great and the skin dry, it is proper to lower the temperature of the surface, and, if possible, to excite sensible perspiration before opium is administered, if we wish to ensure its diaphoretic and soporific effects. But even after opium has been exhibited, when the inordinate heat prevents its sedative operation, it will be found safe and salutary to use the tepid or cold affusion; and when the heat is by this means reduced, repose and sleep will follow. Tepid or cold drink will produce, though in a weaker degree, similar benefit. These methods of promoting the diaphoretic effects of opium, seem more certain and advantageous in fever, than the practice of combining it with ipecacuanha or the preparations of antimony; but where opium is to be used in inflammatory diseases, or in dysentery, doubtless this last method is to be preferred. These remarks must be considered as applying to opium in its ordinary doses, that is, from half a grain to two or three grains of the extract, or from ten to sixty drops of the tincture. Perhaps it has been too much the practice of late, to give this medicine in large doses, and to overlook its effects in smaller quantities. Experience has convinced me that considerable effects are produced on the system by a very few drops of the tincture properly

perly administered, and that it is always unwise to employ it in doses larger than necessary to produce the desired effect.

‘ The effects of alkohol (under which term I comprehend the spirituous and vinous liquors) on the system, have a striking resemblance to those of opium. Alkohol is more heating, less diaphoretic, and less soporific. When, however, *the mind is vacant, the stomach empty, and external impressions excluded*, alkohol, like opium, has a tendency to induce sleep. As sleep however approaches, the heat of the body rises, especially on the surface and extremities, and stimulating the heart and arteries to increased action, produces a state of agitation with which sleep is often incompatible. Or if the dose has been such as to benumb the senses, with the first return of sensibility, the inebriate is roused by intolerable heat from his apoplectic slumbers. The degree of heat in the fever of intoxication is doubtless various in various constitutions. I have observed it to rise to 105° ; nearly the highest degree of heat in the typhus of this island; and Dr. Alexander in his own case, found it as high as 107° . — Under these degrees of heat, the thirst, agitation, and consequent debility, are very considerable, the skin being in general obstinately constricted. The proper treatment in this, as perhaps in all other cases of morbid heat and dry skin, when local inflammation is absent, is to pour large draughts of cold water into the stomach, or to affuse it on the surface. By this practice the heat is reduced, the orifices of the skin opened, sensible perspiration is produced, and one half the mischief of intoxication is prevented. Similar effects may be produced, though in a weaker degree, by tepid drinks, or the tepid affusion.

‘ The administration of alkohol in fever, requires similar precautions as that of opium. It should not be given when the heat is great and the skin dry and burning; but it may in general be given with great safety and advantage when the heat is nearly of the natu-

ral standard ; and even when it is somewhat above it, if the orifices of the skin are open, and the surface is moist. Opium, as was before remarked, is more sudorific than alcohol, and given in that stage of the fever of intoxication in which the skin begins to relax, it often accelerates sensible perspiration, and sometimes occasions it, when it might not otherwise have taken place. In this way I explain a phenomenon which has occurred to others as well as to me, that a moderate dose of opium sometimes gives extraordinary relief to the drunkard, under the sufferings through which he must pass to sanity and strength.'

The 16th chapter treats of the population of the town of Liverpool, with proofs of the great prevalence of typhus fever, in this as well as in other large towns. It appears, from indubitable documents, that nearly a fourth of the whole number of patients admitted to the charitable institutions labour under typhus ; the importance, therefore, of preventive regulations is too manifest to need the force of argument. The means of effecting this, by the establishment of proper houses of reception for fever patients, are here amply discussed and enforced. But for this we must refer to the work itself.

In the 17th and last chapter the author inquires, Is there an inhalation by the skin?—From trials on himself and others, Dr. Currie thinks it established, as a general fact, that no increase in the weight of the body is produced by immersion in water of the heat of 82°, and in five different experiments of the warm bath by himself, the heat varying from 87° to 95°, he never in any instance found his weight augmented. An interesting relation is here given of a case of obstructed deglutition which terminated fatally, the patient being destroyed for want of nourishment. The tepid bath was employed daily, at the temperature of 96°, and consisted of one-fourth milk,
the

the rest water ; the time of immersion was gradually prolonged from 45 minutes to an hour ; the patient always expressed great comfort from the baths with abatement of thirst (which however was never great) and subsequent to the daily use of it, the urine flowed more plentifully, and became less pungent. Notwithstanding these circumstances seemed plainly to indicate an absorption of water by the skin, the weight of the body was not found at all increased after immersion, and Dr. Currie seems to conclude with M. Séguin, from this, and other considerations, that, whilst the epidermis is entire, the absorbents of the surface neither take up water nor air, nor any substance diffused or dissolved in either. But the grounds of his opinion will more fully appear on a perusal of the reflections subjoined to the case above alluded to.

‘ The natural state of the pulse’, the author remarks, ‘ during the first month of Mr. M.’s abstinence, when his strength was daily decaying, demonstrates, that the motion of the heart and arteries gives no certain indication of the strength of the system. Pure debility, within certain limits, does not seem to produce a frequent pulse, nor in all cases, a feeble one ; but when carried to a certain degree, it excites that commotion of the system, in which—first, the contractions of the heart, and afterwards of the lungs, become more rapid ; which in popular language may be denominated the last struggle of nature, and which may be considered as indicating the approach of death. To endeavour to reconcile these phenomena to any of the prevailing theories of vital motion, would be a fruitless attempt. Death has not an uniform aspect, but its *phases* do not appear to me numerous. The concluding scene in the life of Mr. M. may illustrate the form of its approach, as well as the nature of the symptoms in the last stage of fever, and of various other diseases, in which similar symptoms occur.

‘ The natural state of the heat, during the inaction of the stomach, might prove, if it were necessary,

how little the vital heat is connected with the function of digestion, and renders it probable, that the general increase of heat which follows the application of many stimulating bodies to this organ, is not the direct effect of the action of the stomach itself, but of its influence on the heart, or diaphragm, or both. It is asserted by Haller, that in cases similar to that of Mr. M. the heat has been found diminished. The observations made by the thermometer in this case, throw a doubt on the assertion; while the great facility with which Mr. M. parted with his heat, concurs with a variety of corresponding facts to support the position, that in those situations, where the generation of heat is natural, the power of retaining it in the system is in the ratio of the force of the living principle.

‘ But what shall we conclude respecting the absorption of water by the surface of the body in the warm bath?—Admitting that it did not take place in the case of Mr. M. it may be supposed this did not arise from the impermeability of the cuticle, but from the heat of the bath being too high. It may be added, that the analogy of the vegetable kingdom supports this supposition, since vegetables are found to exhale in warm and dry air during the day, but to absorb largely under the moisture and chillness of night. Considerations of this kind might probably influence some learned physicians in London who were consulted in this case, to propose that the heat of the bath should be as low as 80°—It was however raised to 96° for two reasons: the first, that I had found no increase of weight in the Buxton bath at 82°; the second, that as Mr. M. parted with his heat easily, he could not support immersion with comfort in a lower temperature.

‘ It is however more likely to be supposed, that though there was no increase of weight in the case of Mr. M., there might be an absorption in the bath which was countervailed by the increased exhalation.

—The

—The experiments I have detailed do not enable us to decide this point absolutely ; but from them, and from various other considerations, I entertain little doubt, that though the exhalents of the skin pierce the epidermis, and come into contact with the external air, the mouths of the absorbents terminate under it, and are covered by it ; and that while it remains sound and entire, no absorption of solid, liquid, or aeriform elastic fluid, takes place on the surface. In the instances that are supposed to favour the contrary opinion, it will be found, that the article absorbed is forced through the epidermis by mechanical pressure ; or that the epidermis has been previously destroyed by injury or disease ; or if sound, that the article applied to it is of an acrid nature, which first erodes this tegument, and then coming into contact with the mouths of the lymphatics under it, is of course absorbed.*

‘ At the instant that these observations are committed to the press, my attention has been pointed to the valuable memoir on this subject, read before the Academy of Sciences by M. Séguin, of which some account is given by Fourcroy in the third volume of

‘ * The absorption of mercury, sulphur, oil of turpentine, and similar substances, rubbed on the skin in the form of unguents, comes under the first of these descriptions ; the absorption of the same substances, and in some rare instances of lead from the surface of wounds, and of herpetic or other eruptions, under the second ; the absorption of cantharides, aloes, &c. under the third. I am not ignorant of the experiments of Dr. Falkner and Mr. Albernethy, nor wanting in due respect for those gentlemen ; but my own observations, supported by the experiments of M. Séguin, induce me to reject their conclusions. A probable source of error in the experiments supposed to afford a direct proof of cutaneous absorption, is, that they were made on a small part of the body, e. g. the arm or leg, and not on the whole ; though if the mouth and nostrils were left free for respiration, it would be as easy, and much more correct, to make experiments for this purpose, as well as for determining the quantity of exhalation, on the whole of the surface, as on a part. Dr. Marcard, who wrote expressly on the effects of the bath, has adopted the theory of absorption through the skin, without making any experiments.

“ *La Médecine éclairée par les Sciences physiques*, p. 232.” The conclusions of M. Séguin correspond in every particular with those which I have already laid down, and being founded on a great variety of experiments, made for the express purpose of determining on the cutaneous absorption, they appear to me to give his inferences all the solidity of truth. The objection, that though there is no increase of weight in the bath, there may be an absorption, which is countervailed by the exhalation, M. Séguin found a satisfactory mode of invalidating. He dissolved in the water of the bath, in which he made his experiments, substances which produce a specific effect when received into the system, by which their inhalation might be ascertained. He employed the oxygenated muriat of mercury in solution, on a number of venereal patients, and while the epidermis was entire, he never perceived a single instance of salivation, or even of amendment of their complaints. But in cases where a considerable portion of epidermis was injured or destroyed, as in the itch, the specific effects of mercury on the system were produced. The experiments of M. Séguin are very numerous, and appear to be devised so as to meet every objection. He concludes from the whole, that while the epidermis is entire, the absorbents of the surface neither take up water nor air, nor any substance diffused or dissolved in either.

‘ Admitting that the inferences of the friend and coadjutor of Lavoisier are just, how are we to explain the refreshment and abatement of thirst, experienced by Mr. M. in the bath. Referring to what is said in pages 162, 163, on the nature of thirst, we may here shortly observe, that as liquids thrown into the stomach relax the exhalents of the surface, so doubtless this action is reciprocal; and the exhalents of the surface being relaxed in the warm bath, a relaxation in those of the stomach ensues, by which the sense of thirst is abated. In the cold, as well as in the

the hot state of intermittent fever, the thirst is great; but it is always lessened, and generally removed, on the accession of the sweating stage, though no liquid should have been swallowed.

‘ Will this explanation, it may be asked, account for the benefit derived in accidents at sea, when no drink can be produced, from immersing the body in water, or applying wet substances to its surface? It will explain it in part, perhaps, but not wholly.—In the torrid zone, where the greater part of these instances have occurred, the immersion of the body in water, or the application of wet cloths to the skin, will keep the surface cool, by defending it against the direct rays of the sun, and thus prevent the debility produced by an accelerated circulation; it will also defend it, in whatever climate, from the wasting effect of evaporation, and thus be a means of prolonging the strength. This reasoning is supported by a fact which may be inferred from the circumstances I have mentioned, and which is established by the experiments of M. Séguin; that the body wastes much less in water than in air.

‘ In the Buxton bath I found my weight very slightly diminished, but in the case of Mr. M. and in all our experiments on diabetic patients, there was neither diminution nor increase in the bath. In the experiments of M. Séguin there was always some diminution in the bath of whatever temperature, which he ascribes to the pulmonary perspiration. How is this difference accounted for? Though the cutaneous exhalation may have been stopped in Mr. M. during immersion, yet allowing the perspiration by the lungs to have gone on, this alone, supposing no absorption, ought to have produced a diminution of weight in the bath. To this it may be replied, that though no absorption through the skin takes place in the bath, that by the lungs goes on, while in the heat of 96°. the evaporation from the surface of the water, by loading with moisture the air inhaled, prevents its
taking

taking up the moisture in the lungs, and thus diminishes the pulmonary perspiration. Against this source of error it is probable that M. Séguin guarded.* It is in this way that the increase of the weight of the body in moist air, which is said sometimes to occur, and which has been supposed to prove a cutaneous absorption, may be accounted for. In moist air, the absorption of the lungs from the atmosphere goes on unchanged, while the pulmonary, as well as the cutaneous perspiration, is diminished, and thus the increased weight of the body may be explained. On this point however more accurate experiments are required.

‘ It was observed, that the discharge by urine alone, in the case of Mr. M. exceeded much in weight the waste of his whole body; and it cannot be doubted that the discharge by stool and perspiration exceeded the weight of the clysters. Thus it appears that the egesta exceeded the ingesta, in a proportion much greater than the waste of his body will explain. How, it may be said, is this accounted for, unless by cutaneous absorption? In the same way, it may be answered, by the action of the lungs.

‘ That the oxygen inhaled in respiration from the atmosphere unites in part with the carbon of the blood, to form carbonic acid gas, and in part with the hydrogen, to form water, is generally admitted. In Instances of inanition we may suppose the proportion in which it unites to these different substances to be varied by the plastic power of life; that the formation of water is greater than usual, and that of carbonic acid gas less. Thus a portion of the oxygen, which, in the ordinary course of things, *is exhaled in the form of an elastic vapour, being absorbed in*

* I say probable, because I have not seen the memoir of Séguin itself, but only the abstract of it given by Fourcroy, who does not enter into the details.—An account of this abstract is given very accurately, and pretty much in detail, in the Monthly Review Enlarged, vol. xii. p. 514.

the form of water, will serve to retard the waste of the body, and to furnish the blood with the proportion of lymph, which affords a proper supply to the secretions of urine and perspiration. In the case of Mr. M. there was no appearance of that acrimony of the fluids which might naturally have been expected from the cessation of the supply of chyle, and which Haller describes as the constant effect of inanition.

‘ This theory of the increased formation of water in the lungs, has been employed by Dr. Rutherford of Edinburgh, to account for the vast discharge by the bladder in diabetes. It seems also to account for the phenomenon of the egesta exceeding the ingesta, so often observed in that disease. It illustrates the doctrine of Séguin, in the memoir already quoted, of which Fourcroy gives an account in the following words—*Le diabète ne provient point de l'eau absorbée dans l'air par la peau, mais du reflux de celle qui ne peut pas être enlevée aux poumons par l'air trop chargé d'humidité*—a doctrine which appears to be defective, from not pointing out the source of the increased quantity of water in the lungs. Beautiful as the theory of Dr. Rutherford is, it cannot be considered as established in diabetes, or in inanition (to which I have extended it) till the air expired by patients under these diseases shall be examined. In the mean time I may observe, that the application of it to the case of Mr. M., accords with the usual œconomy of the living principle, which, in remedying the defect of particular organs, does not transfer their powers entire to other parts of the system, but modifies or increases the natural action of some other organ, by which that deficiency may be to a certain degree countervailed. Such an exertion of the living principle was evident in the case of Mr. M., in the increased powers of the rectum, which have already been described. These vicarious actions of the system are, however, defective; whether
arising

arising spontaneously, or by the assistance of art. No applications of food to the inner surface of the rectum can long supply the absence of food in the stomach; nor can the want of liquid in that organ, be long countervailed by applications of moisture to the surface, aided by the modified action of the lungs.—After a certain time, though immersed in water to the chin, the thirst will prove intolerable without drink, as the shipwreck described in the Appendix will testify; (*Appendix, p. 24.*) and the sufferings of Tantalus, which the theories of Dr. Marcard led him to deride, will be rated as highly by the naturalist as by the poet *

‘ If the non-absorption of the surface of the body be established, it will ascertain, that contagion is received into the system, in the ordinary course of things, by the lungs only; and, perhaps, justify a practice common, as I am informed, among our more experienced seamen on the coast of Guinea, and other warm climates, who, when exposed during the night to a breeze from the marshes, wrap their heads in a sea-cloak, or other covering, and sleep fearlessly on

‘ * Dr. Marcard, in the work quoted, *p. 135*, after asserting the great inhalation of water by the skin in the bath, declares, that no naturalist will estimate the sufferings of Tantalus highly. It seems probable, that immersion in tepid water is more effectual in abating thirst, than immersion in cold water.

‘ The account I have given of Dr. Rutherford’s theory of diabetes, derive from the valuable inaugural dissertation of Dr. Marcet, of Geneva, just published, presented to me by the ingenious author. To Dr. Marcet I am also indebted for pointing out the memoir of M. Séguin, whose doctrine he himself has controverted, from giving, I apprehend, more weight to the authority of Haller, than on inquiry it will be found to deserve on this subject.

‘ The explanation offered by Dr. Marcet of the increased heat in diabetes, will be found, I believe, irrelevant.—In three cases of this disease which I have examined, the heat previous to the medical treatment was less, not greater than natural, notwithstanding the almost unanimous concurrence of authors in the contrary statement; a proof, among many others, of the inaccuracy of the accounts we have of temperature in disease.

the

the deck, with the rest of their bodies nearly-naked from the heat.'

Notwithstanding the arguments here urged, we cannot think the non-absorption of the skin by any means satisfactorily proved. The question cannot be determined by weighing the body after immersion, at least in the present way of conducting those experiments. It is highly probable, that the same stimulus which excites the absorbents to increased action, increases in a proportional degree the action of the exhalents, and thus a variation in the weight of the body may be prevented. That sweating takes place in the warm bath, Dr. Currie himself allows; and in the case of Mr. M. the forehead at the time of immersion, was covered with a gentle moisture, though the author attributes this to the evaporation of the liquid in the bath. The weight of the body, therefore, remaining stationary after an hour's immersion, is itself an argument in favour of absorption; at least till the formation and absorption of water in the lungs are proved by more conclusive arguments than have yet been adduced in their favour. The reception of the new theory of chemistry of Lavoisier and his co-adjutors is, in a measure, gratuitous as yet; for that there are difficulties attending it, is acknowledged by its warmest advocates. Arguments drawn from this source, in itself wanting certainty, are to be admitted with a good deal of caution. With respect to the remarks on the absorption of mercury, we know that friction is not necessary to the introduction of the common mercurial ointment into the system.

ART. LXIV. *Philosophical Transactions of the Royal Society of London. Part II. for the Year 1797.*

(Continued from page 495.)

BESIDES the valuable paper on the properties of calculous and gouty concretions, of which we gave a transcript in our last, the volume before us contains some interesting experiments and observations on the colour of blood, by Dr. Wells: interesting, as bearing a relation to the modern chemical theories, certain points of which, our readers will see, they tend to invalidate. The known character of the author as an accurate experimentalist, and the value of his observations, render any apology, on our parts, for giving the paper at length, unnecessary.

‘ Dr. Priestley,’ the author observes, ‘ is the only person who has hitherto attempted to shew by what means common air brightens the colour of blood, which has been exposed to it. His opinion is, that the air produces this effect by depriving the blood of its phlogiston; for blood, according to the same author, is wonderfully fitted both to imbibe and to part with phlogiston, becoming black when charged with that principle, but highly florid when freed from it. Various arguments may be brought to prove that this opinion is erroneous, even upon the admission of such a principle of bodies as phlogiston. It may be said, for instance, that it is contrary to the laws of chemical affinity, that the same mass should, at one time, convert pure into phlogisticated air, by giving out its phlogiston, and immediately after reconvert phlogisticated into pure air, by imbibing that principle: both which changes are supposed by Dr. Priestley to be induced by blood upon those airs. Again, it may be urged, that since the neutral salts, and the different alkalies, when saturated with fixed air, produce

duce the same effect as common air upon the colour of blood, if common air acts by attracting phlogiston, those other bodies must have a similar operation.— But surely it cannot be thought, that the mild volatile alkali, which has been supposed by chemists to superabound with phlogiston, can yet attract it from blood. It appears to me, however, unnecessary to bring any further arguments of this kind against the opinion of Dr. Priestley, since the following experiments will, I expect, be thought sufficient to shew, in opposition to what is taken for granted by him in the whole of his inquiry, that the alteration induced upon the colour of blood, both by common air and the neutral salts, is altogether independent of any change affected by them upon its colouring matter.

‘ I infused a piece of black crassamentum of blood in distilled water, and immediately after covered the containing vessel closely, to prevent the access of air. Having obtained by this means a transparent solution of the red matter of blood, nearly free from serum and coagulable lymph, I exposed a quantity of it to the open air, in a shallow vessel, and poured an equal quantity into a small phial, which was then well closed. When the first portion of the solution had been exposed to the air for several hours, I decanted it into a phial of the same size and shape as that which contained the second portion; and having added to it as much distilled water as was sufficient to compensate the loss it had suffered by evaporation, I now compared the two together, and found them to be exactly of the same colour, with regard both to kind and degree. I afterwards poured two other equal quantities of the red solution into two phials of the same size and shape; to one I added a little of a solution of nitre in water, and to the other as much distilled water. Upon comparing the two mixtures together, I found that they also possessed precisely the same colour. Lastly, I cut a quantity of crassamentum of blood into thin slices, and exposed them to

common air. When they became florid, I put them into a phial containing distilled water. I then took as much of the same crassamentum, which was still black, and infused it in an equal quantity of distilled water, contained in a phial similar in size and shape to the former. The two solutions which were thus obtained, one from florid blood, the other from black blood, were, notwithstanding, of precisely the same colour. These experiments were frequently repeated, and were attended with the same results, as often as I used certain precautions, which shall be mentioned hereafter, as the reasons for them will then be more readily understood than they can be at present.

‘ Assuming, therefore, as proved, that neither common air, nor the neutral salts (for all those I have tried are similar to nitre in this respect) change the colour of the red matter of blood; I shall now attempt to explain the manner in which those substances give, notwithstanding, to black blood a florid appearance; premising, however, some observations upon the colours of bodies in general.

‘ It was the opinion of Kepler, that light is reflected without colour from the surfaces of bodies: which he says is easily proved, by exposing to the sun’s light a number of cups filled with transparent liquors of different colours, and receiving the reflections from them upon a white ground in a dark place. Zucchi, who was younger than Kepler, but for some time his cotemporary, taught more explicitly, that the colours of bodies depend, not upon the light which is reflected from their anterior surfaces, but upon that portion of it which is received into their internal parts, and is thence sent back through those surfaces. The following are some of the experiments upon which he founded this doctrine. He exposed small round pieces of transparent glass, tinged with various colours, to the light of the sun, and received what was reflected from them upon
white

white paper, in a darkened part of his room. He then found, that each glass produced two luminous circles, which, when the paper was sufficiently remote, were entirely separate from each other; and that the circle which proceeded from the upper surface of the glass was altogether without colour; while that which arose from the under surface, was of the same colour as the glass exhibited, when held between the light and the eye. From these experiments Zucchius also concluded, first, that every coloured body must be in some degree transparent, since a body absolutely impenetrable to light, could only reflect the colours of other bodies, but possess none of its own: and secondly, that all bodies, which appear coloured when seen by reflected light, must be in some measure opaque; for as the light which is reflected from their surfaces comes untinged to the eye, if that part of it which penetrates their substance were afterwards to proceed in it without impediment, no colour could be exhibited by them.

When Sir Isaac Newton began his experiments upon light and colours, it was generally believed, that colours in opaque bodies arise from some modification given to light by the surfaces which reflect it. In opposition to one part of this opinion, our great philosopher maintained, that such bodies are seen coloured, from their acting differently upon the different colorific rays, of which white light is composed; but having established this point beyond dispute, he seems to have admitted, without inquiry, that colours are produced at the surfaces of the opaque bodies to which they belong; for his experiments do not necessarily lead to such a conclusion; on the contrary, they are not more consistent with it, than they are with the opinion of Kepler and Zucchius. This opinion, indeed, he appears not to have known: since he has taken for granted, what is contradicted by the experiments upon which

it is founded, that the tinging particles of transparent bodies reflect coloured light.

‘ The very splendour of Sir Isaac Newton’s discoveries in optics, has probably done some injury to this branch of knowledge : for soon after they were made public, it became a common opinion, that the subject of light and colours had been exhausted by that great man, and that no writer upon it before him was now worthy of being read. The former part of this opinion has long been generally acknowledged to be unjust ; but the latter part of it is still maintained by many ; among whom may be placed the learned Mr. Delaval. This gentleman has lately published* a very elaborate treatise to prove, that the colours of opaque bodies do not arise from the rays of light which they reflect from their anterior surfaces, but from that portion of it, which, having penetrated their anterior surfaces, is reflected by the opaque particles which are diffused through their substance. But had the learned author not believed, that no European writer upon colours, before Sir Isaac Newton, contained any valuable information upon that subject, he would probably have discovered, that both Kepler and Zucchi^{us} had long ago maintained the very opinion which he now advances, and that they had built it upon experiments similar to his own. The merit of the invention of this theory belongs, therefore, to the great Kepler : but still much praise is due to Mr. Delaval, both for reviving and confirming it ; since, though it be not free from defects in some of its parts, it affords solutions of several optical difficulties, which, as far as I know, admit of an explanation from no other source.— Among these, I regard the phænomenon which is the subject of the present inquiry.

‘ To shew, then, from the theory of Kepler, Zucchi^{us}, and Delaval, how common air and the neutral

* Manchester Memoirs, Vol. II.

salts may brighten the appearance of blood, without producing any change upon its colouring matter, I shall first suppose, that all its parts have the same reflective power. The consequence will be, that a mass sufficiently thick to suffocate the whole of the light which enters it, before it can proceed to the posterior surface, and be thence returned through the first surface, must appear black; for the rays which are reflected from the first surface are without colour; and, by hypothesis, none can be reflected from its internal parts. In the next place, let there be dispersed through this black mass a small number of particles, differing from it in reflective power, and it will immediately appear slightly coloured; for some of the rays, which have penetrated its surface, will be reflected by those particles, and will come to the eye obscurely tinged with the colour, which is exhibited by a thin layer of blood, when placed between us and the light. Increase now by degrees the number of these particles, and in the same proportion as they are multiplied must the colour of the mass become both stronger and brighter.

‘ Having thus shewn that a black mass may become highly coloured, merely by a considerable reflection of light from its internal parts; if I should now be able to prove, that both common air and the neutral salts increase the reflection of light from the internal parts of blood, at the same time that they brighten it, great progress would certainly be made in establishing the opinion, that the change of its appearance, which is occasioned by them, depends upon that circumstance alone. But the following observations seem to place this point beyond doubt.

‘ I compared several pieces of crassamentum of blood, which had been reddened by means of common air and the neutral salts, with other pieces of the same crassamentum which were still black, or nearly so; upon which I found, that the reddened pieces manifestly reflected more light than the black.

One proof of this was, that the minute parts of the former, could be much more distinctly seen than those of the latter. Now this increased reflection of light in the reddened pieces could not arise from any change in the reflective power of their surfaces ; for bodies reflect light from their surfaces in proportion to their density and inflammability : and neither of those qualities, in the reddened pieces of crassamentum, can be supposed to have been augmented by common air, or a solution of a neutral salt in water. The increased reflection must, consequently, have arisen from some change in their internal parts, by means of which, much of the light which had formerly been suffocated, was now sent back through their anterior surfaces, tinged with the colour of the medium through which it had passed.

‘ The precise nature of the change which is induced upon blood by the neutral salts, is made manifest by the following experiment : I poured upon a piece of printed card, as much serum, rendered very turbid with red globules, as barely allowed the words to be legible through it. I next dropped upon the card a little of a solution of nitre in water ; when I observed, that, wherever the solution came in contact with the turbid serum, a whitish cloud was immediately formed. The two fluids were then stirred together ; upon which the mixture became so opaque, that the printed letters upon the card could no longer be seen. I have not hitherto been able to devise any experiment which shews the exact change induced by common air ; but it is evident that air must also, in some way, increase the opacity of blood, since it can, by no other means, increase the reflection of light from the anterior parts of the body.

‘ This theory explains another fact respecting the colour of blood, which might otherwise seem unaccountable. If a small quantity of a concentrated mineral acid be applied to a piece of dark crassamentum, the parts touched by it will, for an instant, appear

appear florid; but the same acids, added to a solution of the red matter in water, do nothing more than destroy its colour. Upon examining the crassamentum, a reason for this difference of effect is discovered; for the spots upon which the acid was dropped are found covered with whitish films. From which it seems evident, that the acid had occasioned an increase of opacity in the crassamentum, more quickly than it had destroyed its colour; and that the red matter, from having been in consequence seen by a greater quantity of light, had in that short interval appeared more florid than formerly.

‘ The change which, I think, I have proved to take place in blood, when its colour is brightened by common air and the neutral salts, is similar to that which occurs to cinnabar, in the making of vermilion. This pigment, it is known, is formed from cinnabar, merely by subjecting it to a minute mechanical division. But the effect of this division is, to interpose among its particles, an infinite number of molecules of air, which, now acting as opaque matter, increase the reflection of light from the interior parts of the heap, and by this means occasion the whole difference of appearance which is observed between those two states of the chemical body.

‘ I expect, however, it will be said, in opposition to what I have advanced, that, granting an increased reflection of light takes place from the interior parts of blood, in consequence of the application of common air and the neutral salts, still this is not a sufficient cause for the production of the colour which they occasion; for the colour of blood, after those substances have acted upon it, is a scarlet, which, agreeably to the observations of a learned and ingenious Fellow of this Society, Dr. G. Fordyce,* differs not only in brightness, but also from the ordinary colour of that fluid, which is a Modena red.

* Elements of the Practice of Physic, p. 13.

‘ My answer is, that there are examples, besides that to which the objection is made, of dark blood appearing florid, merely from its colouring matter being seen by means of an increased quantity of light. One is afforded by rubbing a piece of the darkest crassamentum with a proper quantity of serum; for a mixture is thus formed, in a few seconds, possessing a colour similar to that which is given to crassamentum by common air. But here we certainly do nothing more than interpose among the red globules a number of the less dense particles of serum; which, in their present situation, act as opaque matter, and consequently increase the internal reflections. A second example occurs, when we view, by transmitted light, the fine edges and angles of a piece of crassamentum in water; for, in this situation, their colour appears to be a bright scarlet, though all the other parts of the same mass are black. These facts seem sufficient to prove that the immediate cause I have assigned for the production of the florid appearance in blood, which has been exposed to the action of common air and neutral salts, is adequate to the effect; but I shall advance a step further, and shew how the Modena red is converted into a scarlet. Blood, as I have found by experiment, is one of those fluids which Sir Isaac Newton has observed appear yellow, if viewed in very thin masses. When, therefore, a number of opaque particles are formed in it, by the action of common air and the neutral salts, many of them must be situated immediately beneath the surface, the light reflected by these will consequently be yellow; and the whole effect of the newly-formed opaque particles upon the appearance of the mass will be the same as if yellow had been added to its former colour. A Modena red and yellow are the colours which compose scarlet. I shall now relate the cautions to be observed in making the experiments which are described in the beginning of this paper.

The

‘ The first is, that the blood should be newly drawn, and the weather cool: for as the solution of the red matter is not to be filtered, but must become transparent by the gradual subsiding of whatever may render it turbid, if the blood be old, or the weather warm, it will often assume, before it be clear, a dark and purplish hue. When exposed in this state to the atmosphere in a broad and shallow vessel, its colour changes to a bright red, which, however, is not brighter than the proper colour of the solution. The dark purplish hue seems owing to some modification of sulphur; for the solution possessing it smells like hepatic air, particularly when agitated, and tarnishes silver which is held over it. Neutral salts produce no change upon this colour.

‘ The second caution is, that the neutral salts be not added to the red solution, except when perfectly transparent; for if it be not so, the salts will render it more turbid, and the mixture will appear brighter, if seen by reflected light.

‘ The last I shall note is, that the red solution ought to be poured gently from the vessel in which it has been made; if it be not, as it is a mucilaginous liquor, it is apt to entangle small particles of air, which, by acting as opaque matter, will for some time alter the appearance of the solution.

‘ I proceed next to offer a few observations upon the cause of the red colour of blood.

‘ It has of late been very generally supposed, that blood derives its colour from iron. As far as I know, however, no other argument has been given in support of this opinion, than that the red matter is found to contain that metal, but there is certainly no necessary connection between redness and iron; since this metal exists in many bodies of other colours, and even in various parts of animals, without colour, as bones and wool. More direct reasons, however, may be given for rejecting this opinion.

‘ 1. I know of no colour, arising from a metal, which can be permanently destroyed by exposing its subject,

subject, in a close vessel, to a heat less than that of boiling water. But this happens with respect to the colour of blood.

‘ 2. If the colour from a metal in any substance be destroyed by an alkali, it may be restored by the immediate addition of an acid; and the like will happen from the addition of a proper quantity of alkali, if the colour has been destroyed by an acid. The colour of blood, on the contrary, when once destroyed, either by an acid or an alkali, can never be brought back.

‘ 3. If iron be the cause of the red colour of blood, it must exist there in a saline state, since the red matter is soluble in water. The substances, therefore, which detect almost the smallest quantity of iron in such a state, ought likewise to demonstrate its presence in blood; but, upon adding Prussian alkali, and an infusion of galls, to a very saturate solution of the red matter, I could not observe in the former case, the slightest blue precipitate, or in the latter, that the mixture had acquired the least blue or purple tint.

‘ Upon the whole, it appears to me, that blood derives its colour from the peculiar organization of the animal matter of one of its parts; for whenever this is destroyed, the colour disappears, and can never be made to return; which would not, I think, be the case, if it depended upon the presence of any foreign substance whatsoever.

‘ I shall conclude this paper with relating several miscellaneous facts respecting the colour of blood, and some conclusions which may be formed from them.

‘ Dr. Priestley has mentioned,* that the only animal fluid, beside serum, which he found to transmit the influence of common air to blood, was milk. But I have observed, that the white of an egg possesses the same property, notwithstanding its great tenacity. Now as serum contains an animal substance very similar to the white of eggs, it occurred

* Phil. Transf. for 1776, p. 246.

to me as a question, whether, in transmitting the influence of air to blood, it acts by its salts only, or partly by means of the substance of which I have just spoken. I took, therefore, a quantity of urine, which is known to contain nearly the same salts as serum, and having added to it as much distilled water as rendered its taste of the same pungency as that of serum, I poured the mixture upon a piece of dark crassamentum of blood. I then put to another piece of the same crassamentum an equal quantity of serum, and exposed both parcels to the atmosphere. The result was, that the blood in the diluted urine did not become nearly as florid as that in the serum. I have found, also, that a solution of sugar in water conveys the influence of air to blood; from which it seems probable, that the milk owes its similar property to the saccharine matter which it contains. Black blood exposed to the air under mucilage of gum arabic, does not become florid.

‘ It has been said,* that neither serum, nor solutions of the neutral salts, dissolve the red matter of blood. But this induction has been made from too small a number of experiments; for saturate solutions of all the neutral salts, which I have tried, will extract, though slowly, red tinctures from blood, some of which are very deep; and neither they nor serum, added in any proportion to a solution of the red matter in water, alter its colour or transparency, except by diluting it. The following experiments, however, will place this point in a clearer light.

‘ I added a drachm of distilled water to an ounce of serum, and poured the mixture upon a small piece of crassamentum. Upon an equal piece of crassamentum I poured a drachm of water, and after some time added an ounce of serum. Each parcel, therefore, contained the same quantity of crassamentum, serum, and water; but the crassamentum, upon

* Fordyce’s Elements of the Practice of Physic, p. 14.

which

which the mixture of serum and water had been poured, communicated no tinge to it; while the other piece, to which water had been first applied, and afterwards serum, gave a deep colour to the fluid above it. I made similar experiments with crassamentum, water, and a dilute solution of neutral salts, which were attended with the same results.

‘ Since then neither serum, nor a dilute solution of a neutral salt, will extract colour from blood, though they are both capable of dissolving the red matter, when separated by water from the other parts of the mass, it follows, in my opinion, that what are called the red globules consist of two parts, one within the other, and that the outer, being insoluble in serum or dilute solutions of neutral salts, defends the inner from the action of those fluids. It is remarkable, that microscopical observations led Mr. Hewson to the same conclusion, namely, that the red globules consist of two parts*, which, according to him, are an exterior vesicle, and an interior solid sphere. But the same writer, upon the authority of other microscopic experiments, asserts, that the vesicles are red. If they be so, there must exist two red matters in the blood, possessing different chemical properties, which is certainly far from being probable.

‘ The exterior part of the globule appears to be that ingredient of the blood upon which common air and the neutral salts produce their immediate effect, when they render the whole mass florid; for I have shewn they do not act upon the red matter itself; and I have not found that they occasion any change in coagulated lymph or serum. The only matter then which remains to be operated upon, is that which I have mentioned. It seems evident also, from what has been just stated, that there exists an animal matter in blood different from the coagulable lymph, the

* Hewson's Works, vol. III. p. 17.

coagulable part of the serum, the putrescent muci-
lage, and the red particles, which, I believe, are all
the kinds it has hitherto been supposed to contain.

‘ The microscopical observations of Mr. Hewson
appear likewise to furnish a reason, why both water
and a saturate solution of a neutral salt can extract
colour from the red globules, though a mixture of
those fluids be incapable of the same effect. For wa-
ter, applied to the red globules, separates the exterior
vesicles from the red particles, which are therefore
now open to the action of any solvent. The addition,
however, of a small quantity of neutral salt to the
water enables the vesicles to preserve their shape, and
to retain the inner spherules. Upon the addition of
a greater quantity of salt the vesicles contract, and
apply themselves closely to the red particles within.
Thus far Mr. Hewson’s observations extend. Let it
now be supposed that the vesicles contract still more,
from a further addition of salt to the water; the
consequence must be, that, as the internal particles
are incompressible the sides of the vesicles will be
rent, and their contents exposed to the action of the
surrounding fluid. Both water and a strong solution
of a neutral salt may, therefore, destroy the organi-
zation of the vesicles, though in different ways, and
thus agree in bringing the red matter in contact with
a solvent: while a mixture of those two fluids, namely,
a dilute solution of a neutral salt, will, by hardening
the vesicles, increase the defence of the red matter
against the action of such substances as are capable of
dissolving it. But all reasoning founded upon ex-
periments with microscopes, ought, perhaps, to be re-
garded as, in great measure, conjectural.’

ART. LXV. *A Practical Inquiry on DISORDERED RESPIRATION, distinguishing CONVULSIVE ASTHMA, it's Specific Causes, and Proper Indications of Cure.* By ROBERT BREE, M. D. late of University College, Oxford, and the University of Edinburgh, &c. 8vo, 420 pages, price 6s. Robinfons, London, 1797.

SINCE the time of Floyer, there has been no publication on the subject of Asthma, which carried with it, the strong recommendation of personal experience in the author, till the inquiry appeared, which is now before us. Dr. Bree, like Floyer, was a sufferer from the disease, but had happily better success in combating it. We certainly entertain favourable sentiments of his judgement, founded on this practical advantage; nor has a fair perusal of his work diminished our confidence in his authority.

The work commences with a brief account of the structure and function of the pulmonary system. This system, the author observes, is liable to two principal diseases, which proceed from an alteration of the vascular structure of the vesiculæ and bronchiæ. If from the causes which induce phthisis, the capillary vessels spread on the air-vesicles are inflamed, the membrane of the vesicles soon becomes dry; serum will be exhaled in quantity insufficient to lubricate the lining, and the absorbent lymphatics will drink up the little moisture effused as fast as it is bestowed. A dry cough then comes on, which is not excited to relieve the vesicles of mucus, but is the effect of irritation on the inflamed lining. This is the state which so commonly leads on to phthisis.

In habits of an opposite temperament, the vesicles of the lungs do not become dry. The capillary vessels undergo a loss of tone; serum is effused into the vesicle in greater quantity than the absorbents can regularly drink up, or respiration in its usual exercise

cise discharge. When the fluid has accumulated in this manner, it becomes, from irritation, the cause of convulsive asthma.

Phthisis and asthma, therefore, are considered as comprehending the features of every serious indisposition which can generally attack the lungs. In their regular, simple, and uncomplicated forms, the remedies of one are the exciting causes of the other, and *vice versa*.

In the second section the author proceeds to define asthma, and follows Willis and Hoffman, in making the term a general one for cases of difficult respiration. ‘*Asthma is an excessive contraction of the muscles of respiration, usually called difficulty of breathing, excited by irritation, and proceeding from various remote causes.*’ Under this generic definition are comprehended all affections which disorder respiration, by exciting an unusual action of the muscles exercised in that function; the influence on these muscles being the same in kind, though distinct in quantity of force, from the irritation of a simple catarrh, to the ponderous offence of a vomica in the substance of the lungs. In the convulsive species the muscles are contracted with more energy and violence than in any other; but the contractions in this case do not obey any law, nor assume any form which is not common to the extraordinary action of the same muscles in milder instances of dyspnœa.’

That the excessive action of the muscles of respiration proceeds from an irritating cause, is first deduced from analogy of other muscles, thrown into spasmodic action by the same cause. This is acknowledged in disorders of the stomach, bowels, and uterus, which only lose their unusual contractions when the offence which disturbed them is discharged. A rule of the œconomy is taken as a guide in this enquiry, which appears to have been much neglected in former pathologies of convulsive asthma, though
the

the effect of extraordinary contractions of muscles was the same in this as in the continued species, in which the irritation was not disputed.

The author next examines some popular terms, and produces facts and experiments to shew, that *difficulty of breathing* cannot arise from the simple circumstance of wanting air, but must consist in that action of the respiratory muscles excited by irritation (which may exist externally, as well as internally,) on the air cavities of the lungs. ‘ If the compression is external to the air cavities of the lungs, the respiratory labour will not be so great as if the cavities themselves are obstructed; in this case, the peculiar diagnostics of periodic convulsive asthma, may not all be present; but dyspnœa, comprizing a set of symptoms of the same indication, though inferior in force, and seldom carried into paroxysms, but whose sum of uneasiness is perhaps not less, supplies its place.’

‘ Wherever, then, a compression of the lungs, or organic derangement irritates the organ, the effort which has been commonly called *difficulty of breathing* is excited, and fuller inspirations become a natural means of relief. In the instance of hydrothorax, the compression arising from an extraneous material, there is considerable dyspnœa; but in ordinary expiration, the compression being a natural operation of the system, is not attended with uneasiness, and scarcely with conscious perception.’ Efforts to inspire deeply, are also an instrument of relief, when the irritation is seated within the air cavities. ‘ Because, whatever material is ejected in vapour, or in mucus, from the trachea, the expiration which conveys it, must be preceded by inspiration as deep as the seat of the offending matter.’ Without this effect of disengaging the lungs from offence, the convulsive breathing is excited without an object, and without use.’

The

The convulsions are, however, external to the lungs; because the ‘instruments which nature can alone call into action, when the lungs are injured or oppressed, are the muscles which act externally in expanding or compressing their cavities, for the purpose of inspiring or expiring air.’ The great analogy between these actions, and those excited to propel fæces from the rectum and bladder, is curious, and supports the argument of the author. The perception of offence is, in all cases, where the matter of irritation rests; as in the rectum, bladder, or lungs; these are, however, comparatively passive, whilst the muscles which act upon them are exercised with great energy.

The muscles of the belly and thorax correspond or sympathize with an union of design, to avert evil, or to restore health. ‘The muscles of respiration may be habituated to the operations of this sympathy, and excited to contract by various and apparently dissimilar species of stimulus. The diaphragm and abdominal muscles are the natural and common instruments of official support to three functions. When disturbed by too much irritation, they act strongly upon the bladder, upon the bowels, and upon the lungs. Such a communication of assistance creates some alliance between them and other muscles which are not common to the exercise of the three functions, but which are more peculiarly appropriated to the separate duty of serving one.’

Sect. 3. The muscular actions in asthma having been proved to arise from irritation, as far as analogy and the laws of animal life can in general support the proposition, we are now to see what sort of irritation exists in the disease, and what form embodies it.

The whole of Floyers *continued species of asthma* affords manifest evidence of the existence of the cause assigned. Many curious examples are likewise given

or referred to in authors, in which irritation was not less clearly discoverable.

Sect. 4. *Dyspnœa* is a case of asthma; and it appears that this genus, in the nosology of Cullen, comprises cases of continued asthma of Floyer, all which are owing to undeniable irritation. This affection, and also *anhelation* from violent exercise, are marked with the external signs of asthma; and the irritating cause is suffocative fullness of the pulmonary vessels from suppressed evacuations, or too rapid arrival of venous blood in the right side of the heart from bodily motion: external compression is also a cause of dyspnœa; and this may be created by water, or other extraneous matters in the cavity of the chest.

Sect. 5. It having been shewn that the affection of respiration in dyspnœa, and in one species of asthma of Floyer, must be referred to a cause which was necessarily irritating on the pulmonary organ.—We are next introduced to the main subject of the enquiry, the periodic flatulent asthma of Floyer, the spasmodic or convulsive asthma of Willis, Hoffman, and Cullen. This disease is described agreeably to the character given by Cullen, and other writers. The symptoms, the author thinks, are to be accounted for consistently with the preceding principles.

‘ In endeavouring,’ he observes, ‘ to find the cause of these symptoms, I shall attend to the steps which have already led me to the source of similar appearances in disorders of respiration before treated; and I shall assume the probability of finding a cause similar in its properties of acrimony or bulk, by which the energy of the respiratory muscles is irritated into excess of action.

‘ In those disorders a material was excreted, or a compressing force was removed, before the extraordinary contractions of the muscles were suspended, or finally made to subside. In some cases a mechanical incon-

inconvenience, as in the instance of a gibbous spine, could not be expelled, and then the proportion of irritation, which it was calculated to give, continued in action, and the disorder of respiration did not cease.

‘ In such circumstances the indications were natural, and entirely coinciding with the laws which govern the animal œconomy. They would have afforded *prima facie* evidence of something which nature was desirous to discharge, even if the offensive substance had not been exposed to the observation of the senses.

‘ Having ascertained such outlines and signals of direction, we are impelled to follow the path in which nature is our guide; and we are encouraged, by the acknowledged simplicity and uniformity of her laws, to expect that the same principle of *irritation* has excited her efforts in one case of asthma, as in another, though it may be more retired from our view, and wear a different form.

‘ In this species of asthma, (the convulsive) it appears by the diagnostic symptoms of nosologists, that the same efforts of the muscles of respiration are exerted as in the continued species of Floyer, in which the paroxysm does not subside into a perfect intermission, and that in general a continuance of too much action of those muscles is the only distinction to be perceived in the latter species, as far as regards external phenomena.

‘ It appears, therefore, more divested of hypothesis, to have inferred that similar effects have proceeded from the operation of similar causes, and to have combated the distinction arising from the permanence of the symptoms in one species, and their suspension in the other, by adverting to the powers of the animal system, and examining if those powers furnished a means of silently, but efficaciously, removing the particular irritation which the data might have suggested to be the occasion of the periodic asthma.’

Sir J. Floyer describes the periodic asthma in terms which convince us, that the same powers were exerted in that as in the continued species; but he did not consider them as the efforts of nature; because he could not yet account for those few instances of asthma, in which mucus was not excreted, and had not obtained an accurate knowledge of the absorbing system, which is constantly in action to take up the effused fluid, and prevent its giving offence. ‘But motions, performed with great energy,’ (says the author,) ‘are strong indications of some *injury* to be averted, or some *offence* to be removed; and as in the periodic asthma the cause is not so indisputably conspicuous as in the continued species, I shall take advantage of these indications, and apply them as the best direction which an obscure disease affords.’

In the 6th section the author notices the mucus which is excreted in the spasmodic asthma, and which is mentioned in the description of Cullen. This has generally been looked upon as an effect, but Dr. Bree views it as a prominent cause of the paroxysm of asthma, or when it is absent, only yielding to a different cause equally irritating to the organ, and exciting spasmodic contractions of the respiratory muscles. In proof of this, we are referred to authors who have professedly written upon asthma, ancient and modern; and this examination strongly supports his position. It is, indeed, remarkable, that no writer has left out of his causes of asthma, a condition of the body subject to serous defluxions on the lungs, nor a state of the lungs exempt from some irritating accretion. Even Willis founded his spasmodic theory, from which the doctrines of Hoffman and Cullen have been drawn, on a morbid serosity, which he never fails to point out as a predisponent cause of asthma. A citation of old authors may appear unnecessary in general treatises; but here we may allow

*

the

the liberty in an inquiry professedly searching for evidence in favour of a certain proposition. We find Greek, Arabian, and Latin writers, with succeeding ones down to Cullen, all agreeing in the same point, and giving testimony to the fact, which our author alledges to be decisive in this disease. Willis is more particularly attended to as an original.

‘ Willis,’ he remarks, ‘ first established the doctrine of convulsive motions in asthma, and succeeding writers have generally contented themselves with adopting his theory. “ It is astonishing,” says Morgagni, “ that Willis should have been the first who observed “ the nature of symptoms, which we have univer-
“ sally, since his time, acknowledged to exist in
“ asthma.”

‘ It is, indeed, truly remarkable, that physiologists should have neglected to notice, that the contraction of any muscle performed with greater frequency or more energy than is common in health, should assume the type of convulsion or spasm; for convulsion is nothing but a too strong contraction of the muscle or fibre; and respiration being only exercised by contraction of muscles, if that contraction is stronger than the purposes of ordinary health demand, it may be justly said to have become convulsive or spasmodic.

‘ But if surprise is excited by the nature of the contractions in asthma not having been ascertained before the time of Willis, still greater wonder may be expressed that subsequent authors should have been so much occupied in contemplating the new actions, as to forget the evidence of the state of the habit in which they were said to take place, and which was by Willis esteemed so prominent and conspicuous, as to be the very cause exciting the morbid motions which he described.’

Sect. 7. The author next inquires into the validity of the evidence which dissection furnishes in support of his proximate cause. We are presented

with a series of observations from Morgagni, Bonetus, and other anatomists, which prove the existence of extravasated serum in the vesicles of the lungs of asthmatics. But it may be alledged here, as in nearly all instances of dissection, that the appearances might have been the consequences of death, or the last condition preceding it. This objection does not lessen the value of these observations, which are as demonstrative as the subject admits of. The author has always in his view the power of the absorbing lymphatics, which he expects to act in clearing these important cavities, as long as irritability remains.

The instance which is here adduced of a subject who poured out of her lungs the excessive serum, and survived the paroxysm, which Drs. Darwin and Beddoes affirmed to be the convulsive asthma, is a very striking proof, and such as cannot be easily confuted*. The fact is also confirmed by Cælius Aurelianus, who describes the paroxysm in terms that at this distance of time accurately correspond with the symptoms under which the patient laboured. The manner in which serum enters the lungs, is lastly explained by reference to Dr. Hales, whose experiments are well known, and deservedly held in esteem.

Sect. 8. The writers who followed Willis on the subject of asthma are considered, and their doctrines are termed conjectural and obscure. In defence of this remark, we are reminded of their invisible *constrictions* of the bronchiæ, and *effervescences* of the blood; a supposed condition of the lungs, which, however possible, should have given way to conspicuous appearances, adequate to explain the cause, and even to afford the proper indications of cure.

Hoffman's cases of asthma are all attended with irritating causes, whatever names we may assign to them; and he follows Aretæus in his signal mark of

* See Medical Review, Vol. III. page 470.

the disease, *expectoration of frothy aqueous matter, and suffocation.*

Cullen has distinguished convulsive asthma with the symptom of mucus expectoration, which Dr. Bree reasonably argues must proceed from effused lymph in the vesicle, as the case is distinct from catarrhal, or other affections of the trachea and bronchial pipes, accompanied with inflammation. If his reasoning is not conclusive on this point, standing by itself, yet supported by the authorities which have preceded it, and the analogies and laws of animal life which are referred to in every position which is advanced, the cause is rendered more probable, and the general proposition acquires additional strength. Serous or mucous matter, then, is considered as the material which causes convulsive actions of the respiratory muscles, making one species of asthma.

‘ These inordinate motions may seem inadequate to the effect by counteracting the purpose of their excitement ; but in the early condition of the complaint, a quickness of respiration precedes the paroxysm, that by the increased exercise of this function, and yet not violent, the expirations may carry off in vapour the serum in the cavities ; the action of the absorbents is quickened, it is probable, in the same proportion ; and by the united powers of these instruments, the balance is attempted to be restored between absorption and exhalation. If they are equal to the task, nature makes no more efforts to obtain her purpose ; and a certain state, which would soon be inconsistent with health, is altered by an unobserved but active force of two combined powers. If this object is not accomplished on account of the continued prevalence of the predisposing or exciting causes which prevent the returning contractile tone of the exhalent orifices, or if the lymphatics are unable to perform their share of the work, the energy which has been described will certainly take place.’

The existence of a spasm on the bronchia is disbelieved, because antispasmodics do not remove the symptoms whilst the irritating offence remains; and there has been no proof of this condition given by dissections. On the contrary, Dr. Starck says, that in cases of tubercles and vomicae, the branches of the trachea were never found in any degree contracted.

The wheezing is accounted for by the presence of mucus, which narrows the cavities of the air pipes. Relief is, however, perceived by the asthmatic before the free excretion of mucus takes place, which is thus explained.

‘ There must be a point of time when the silent activity of the absorbents has effected some change in the quantity of serum accumulated in the air cells and bronchia; and there must be a degree of oppression from the influence of this serum, which being taken off at that time, will permit the return of some elastic action in the bronchial rings, and vesicular membranes; relief will therefore be perceived in the breast before excretion of phlegm takes place, but not before the mucus has been reduced, by absorption, to a quantity which the internal elastic force of the vesiculæ and bronchia can in some measure controul. Expectoration then partially proceeds, with that indescribable sensation of ease and satisfaction, which the patient will not hesitate to welcome as critical.’

In the ninth section asthma is compared with some other diseases, from which it is properly distinguished, though the cause may be analogous. The inter-currence of asthma and acknowledged dropsy is very remarkable.

Sect. 10. The symptoms which constitute the paroxysm are here separately considered, and the author thinks they may be better explained on the *basis* of his proximate cause, than on any other. It must

must be allowed that the trial by analysis is fair, and if the result agrees with the deduction afforded by the aggregate, our search after truth is much assisted.

The *difficulty of breathing*, he observes, consists as much in the convulsive efforts of the respiratory muscles to relieve the organ, as in the serous collection which impedes the entrance of air, so necessary to its functions.

The *cough* is small and interrupted at the beginning of the paroxysm, because the quantity of effused lymph suppresses the elastic action of the air cavities at that period: it is more free and open at the decline of the symptoms, because the fluid is so far diminished by the absorbing vessels, as to become controllable, and to admit the expirations which constitute cough.

The *expectoration of mucus* is the critical discharge of the very material which had offended the system.

The invasion of the paroxysm in the night is thus accounted for. It makes its attack after the patient has been absorbed in sleep, rendered heavy, if not composed, by the condition which in dyspepsia is so ready to communicate torpor from the stomach to the head; and when, by the delay in the passage of the blood from the right to the left ventricle of the heart, the vessels of the head are affected with local plethora and distention. Under these circumstances, volition being suspended, irritation is to perform the whole duty. Effusion of serum in the vesiculæ of the lungs had previously taken place, and from the condition of the pulmonary vessels must be rapidly increasing. If respiratory action is now diminished, that moment when the oppression of the accumulated fluid can be no longer borne will be accelerated, because less vapour will be exhaled in expiration, and the absorbing vessels will be inadequate to remove the inconvenience by their power alone.

‘ When this period arrives, those extraordinary efforts commence which constitute the paroxysm of asthma,

asthma, and are the *nîsus* of nature to relieve herself of pain'

The *asthmatic diabetes* is attributed to the hydro-pic disposition which prevails, and to that dyspeptic state of the stomach, which always gives a predisposition to asthma. The remarks are here important, as they tend to the same theory which has been advanced by Dr. Rolle on the course of diabetes mellitus, which he fixes in the stomach.

A close application of oxygen to the pulmonary vessels being precluded by the excess of lymph, the *sense of straitness* and *anxiety* partly arises from the want of this animating principle; hence the heart and arteries are deficient in vigorous contractions, the blood will remain longer in the pulmonary vessels, and the right ventricles, because the current through these vessels is rendered slow and difficult by external compression. Hence polypi are formed, and patients are affected with syncope and irregular pulse.

The spitting of *black mucus* has been spoken of by many authors, but never satisfactorily explained. Dr. B. attributes it to the carbon which predominates in the mass of fluids; the oxygen not having been readily absorbed, and the temperament of the asthmatic being too low to be friendly to new chemical affinities. This chemical account of the symptom is new, and ought to be well considered before it is admitted as conclusive.

Of the copious and pale urine discharged in the paroxysm, the author says it is 'never sweet. I have tasted the water of an asthmatic more than once, when the circumstance of quantity and appearance strongly solicited my curiosity, but I always found it weak, saline, and of no saccharine taste whatever.'

The heat of an asthmatic in the height of a fit was 22°. The day before it had been at 97°, the bulb of Fahrenheit's thermometer being placed in the mouth

mouth. Three hours before the death of an asthmatic, the heat was reduced to 73° .

Sect. 11. Of the remote causes, the predisposing deserves the greatest attention, as the cure can only be attempted with success between the fits. Dyspepsia always prevails and appears to be the most prominent feature in the predisposition. Its effects are here fully considered, and its influence in producing asthma clearly demonstrated.

Sect. 12. The exciting causes are described with greater care and precision than in any former work upon the same subject. The observations are practical and useful, embracing all the external circumstances which should be avoided by the asthmatic, or guarded against in treating the disease. The following remarks on density of air are a specimen.

‘ The atmosphere produces effects on the asthma by several changes. When the mercury in the barometer stands as high as 30 inches, the density of the air is sufficient, *cæteris paribus*, to preserve the intermission of his disorder; and alterations from this standard to a lower, will be, according to circumstances, unfriendly. Besides a change from this degree of density, the state of the air may be cold or warm, cold and moist, or warm and moist: and rain, snow or frost, storms and fogs, may give additional impression, but slight in comparison of the state which occasions their appearances:

‘ The observations of Floyer on the influence of density, or rarity of air on the asthmatic, are well founded and just. In a dense atmosphere, acrid miasmata, effluvia, and vapours, are suspended high, and are therefore not so likely to irritate the pulmonary membranes; these floating particles will not so much offend the subjects of mucous irritation, as others, whose habits are characterized with equal sensibility,
but,

But, whose pulmonary membranes are more naked of natural defence from lubricating lymph.

‘ Vapours are, however, accused in all sorts of asthmas, without reflection on the impunity with which many asthmatics inhale the atmosphere of London and Holland. In these places the advantage derived from its density and pressure, more than balances the inconveniencies arising from fog and various animated filth, never perfectly cleared away or dissolved, but from its quantity and incessant supplies, always floating and being inspired.

‘ In situations of greater altitude, impurities of the air are a more sensible exciting cause of asthma, or possibly, it may be more accurate to say, that when vapours hang low in these situations, we have a certain index of the diminished density of the air, which would otherwise carry them off, and that the cause of their low suspension is really a state of atmosphere, producing at the same time the disorder of the respiration.

‘ It may be said upon the same principle, that a dry and settled atmosphere is friendly to the asthmatic, not only because it is free from impure vapours, but also as having more elasticity to press upon the vesiculæ of the lungs.

‘ The circumstances of the atmosphere render the combination of oxygen with the blood difficult or easy. The soft and thin membrane through which it is absorbed, has been frequently, in its natural state, shewn to admit of the penetration of elastic fluids. The predisposition appears in asthma unfriendly to their union, and changes in the atmosphere may more materially obstruct it.

‘ The usual density of the air being lost, a certain volume will in proportion have less weight, and press less against the membrane, and the same volume will have less oxygen to be attracted to the new affinity. Where the heat of the body so much promoting the process was before diminished, this additional change may

may be a serious exciting cause of the asthmatic paroxysm.'

The enquiry into the causes of convulsive asthma, such as it will be found nine times in ten, being brought to a conclusion, the author proposes to examine the remaining varieties of the disease, where he remarks, ' We leave a scene of sensible appearances, and approach the ground where our path is not so plain, and the object of our inquiry more obscure. But analogy is still distinct, and we have ascertained some fundamental laws of the animal œconomy, which bestow no inconsiderable light upon its relations.'

Sect. 13. The second species treated of, is that commonly called the dry asthma. The irritation here, is the acrid or offensive quality of some unobserved matter conveyed by the air, and attached, in the act of inspiration, to the sensible membrane, lining the tracheal and bronchial pipes. The predisposition to this species, is an encreased sensibility to offence, and a dryness of the schneiderian membrane, which makes it more liable to receive injury than when lubricated with lymph. Effluvia, and subtle particles floating in the air, are the forms that this cause wears, which frequently affects subjects recovering from asthma of the former species.

Sect. 14. The next subject is an inquiry, if the cause of convulsive asthma may be extraneous to the thoracic cavity? The author concludes, that the disorder is sometimes occasioned by irritation in the abdominal viscera. Many facts appear to support the conclusion, which is also confirmed by the following physiological reasons. Speaking of the *sympathies* of Whytt, the *Motus Medicati* of Gaubius, he says:

' These salutary actions are, in common instances, excited without consciousness but of the general effect to be produced: such are sneezing, coughing,
and

and laborious respiration, belonging to the pulmonary organ. Vomiting, and discharging feces belonging to the alimentary canal, and passing urine, an action of the bladder; in all these motions, though unconsciously excited, the muscles of the chest and abdomen are active instruments.

‘ Mr. Hunter* takes notice of the analogy between coughing and vomiting; in the former the lungs are passive, in the latter the stomach is not necessarily active, as the powers of the diaphragm and abdominal muscles are competent to empty the stomach as well as the rectum. The muscles of respiration are the active instruments of emptying the lungs, and the same muscles are assistant in evacuating the lower viscera. This natural alliance of powers frequently comes into exertion, when their union would not be necessary to produce the effect desired. In violent coughing to discharge extraneous matter from the lungs, the stomach is compressed, and the diaphragm coming into action, vomiting is brought on. On the contrary, acrimony in the stomach and duodenum excites the associated efforts of the respiratory muscles, which act by sympathy, as if the cause of offence peculiarly disturbed the lungs’.

But the supposition of a more remote seat of the cause of asthma is opposed on the following grounds :

‘ Has any practitioner,’ Dr. Bree asks, ‘ observed convulsive asthma to be excited, as in *Tetanus*, by a prick of the toe? It is natural to believe that where the lungs shew no indisposition, and where no mucus is excreted in the progress of the complaint, an inconvenience may have been oppressive in those other viscera, whose functions are served by the muscles which are excited to extraordinary contractions. The intercostals, the diaphragm, and the

* Vide Observations on Digestion, p. 200.

abdominal muscles are the common property of all the middle and lower viscera, and discover their uses when fæces of the blood are to be expelled from the lungs in mucus, or in the aerial form of carbonic acid and vapour; when acrimony is to be expelled from the stomach by vomit, when excrement is to be discharged from the bowels, and urine from the bladder, or a stone from the kidneys, ureters or bladder; and when extraneous fluid or foetal production is to be propelled from the uterus. Should something hurtful be lodged in any of these organs, the muscles we have mentioned may naturally associate their motions, and the indications are not obscure; until there is good evidence of a more remote seat of the immediate cause of asthma, it is unphilosophical and useless to desert these limits.'

Sect. 15. A consequence of convulsive motions is, the habit of repetition the muscles have contracted by laws peculiar to the animal œconomy. Asthma is believed to depend upon this cause frequently:

‘Whatever may be the origin of convulsive disorder, a certain consequence of repeated exacerbations will be an encreased mobility or sensibility of the moving muscles. Asthma is particularly attended by this inconvenience, which may operate to a renewal of the paroxysm, after the proximate cause is removed, whether it be embodied in mucus or effluvia irritating the lungs, or in any noxious matter hurting an organ of the lower viscera.’

The author gives many examples of the general effect of habit in convulsive disorders, and concludes his theory of causes by proposing the following arrangement as a guide, which may be followed in the practice.

DISOR-

DISORDERED RESPIRATION unattended by Fever, may be divided into *ASTHMA, Continued and Periodic.*

Continued Asthma cannot properly be said to be free from Convulsive Contractions of the respiratory muscles, but these are carried on without regular paroxysms. They are more permanent but less violent, and depend upon fixed Irritation, Abdominal or Thoracic.

Periodic Asthma, discovered in regular paroxysms of more acute energy, and therefore usually called *Convulsive*, which term we adopt as describing its character, and still complying with general custom.

CONVULSIVE ASTHMA.

1st Species, from Pulmonic Irritation of Effused Serum.

2d Species, from Pulmonic Irritation of Aerial Acrimony.

3d Species, from Abdominal Irritation in the Stomach, Uterus, or other Viscera.

4th Species, Secondary and dependent upon *Habit*, after Irritation is removed from the Thoracic, or Abdominal Viscera.

From this view, it will appear that the subject has been taken up on more certain principles than had been before applied to Asthma. The author has also had the advantage of the late experiments on respiration, and in pneumatic chemistry, which he has liberally acknowledged, and connected usefully with his inquiry.

In a future number we shall notice the remaining part of the volume which relates to the cure, and is of considerable importance.

ART.

ART. LXVI. *De morborum primarum viarum vera notitia et curatione; nec non de morbis ex earundem affectionibus oriundis, atque cum iisdem complicatis*, Dissertatio. Auctore D. G. C. T. Wedekind, M. D. & Prof. Quarto. Norimbergæ, 1797. Imported by BOOSEY, London, 1797.

THIS dissertation obtained the prize from the Imperial Academy, and treats methodically on the diseases of the primæ viæ, diseases arising from affections of those parts, and on others complicated with them.

In the introduction the author makes some general observations on these diseases, but dwells chiefly upon those of gastric origin, whence, he is of opinion, the whole, for the most part, originate.

The first chapter treats on the preternatural affections, and accidental differences of diseases of the primæ viæ, in which we do not observe any thing peculiarly new or interesting.

The second chapter comprehends the essential differences of diseases of this canal, with their nosological classification.

ORDER 1st.

Diseases of the Cavity of the Mouth.

Genus 1st.

The assumption of food may be impeded.

1. By those things which render the motion of the jaws difficult or impossible. To this genus belong, fracture of the jaw, luxation, tumors of the salival glands, especially of the parotid, trismus of the mouth, &c. &c.

2. By every thing that impedes the function of this cavity; as wounds of the cheeks, hair

lip, a præternatural opening of the palate bones, inflammation of the tongue, apthæ, cynic spasm, risus sardonius, paralysis, apoplexy, &c.

Genus 2d.

Manducation is injured.

1. By diseases of the teeth, or from their defect.
2. By every thing that renders the motion of the lower jaw difficult.
3. By spasms, ulcers, and wounds of the lips.
4. By various affections of the palate, gums, cheeks, tongue, &c. v.g. inflammations, ulcers, abscesses, &c. &c.

Genus 3d.

Diseases of the Saliva.

The saliva may offend both in quality and quantity.

Too great a quantity may be secreted.

1. By an increased afflux of humours to the salival glands.
 - α from inflammation, angina, small pox, and mercurial ptyalism.
 - β from a stimulus in the mouth, as dentition, tooth-ach, apthæ, and masticatories.
 - γ from a stimulus induced by consent of parts; thus an increase of saliva is observed in hysterical, hypochondriacal, and verminous habits.
 - δ from difficult return of blood by the jugular veins.
 - ϵ from the use of salt.
2. By a wound of a salival duct, especially of that of the parotid gland.

The

The quality of the saliva may offend, when of an acid, acrid, too thin, corrupt, foetid, bitter, salt, sweet, or purulent nature.

The causes which produce a depraved quality of this secretion, are,

1. A too great, or a diminished secretion. In the first instance it will not be of its proper consistence; in the latter it will be too inspissated.
2. A cacochymy of the humors; thus a corrupt taste of the saliva takes place in the scurvy.
3. An abscess of a salival gland, by which pus is mixed with the saliva.
4. Diseased particles from the halitus of the lungs mixing with the saliva.

Genus 4th.

Deglutition may be rendered difficult or impeded in the pharynx.

1. By diseases of the tongue, especially inflammation and paralysis.
2. From a defect of the velum palatinum, or from a tumor or inflammation of the uvula, as in ozæna venerea.
3. By a tumor in the fauces, either of the larynx or tonsils, and by a polype of the fauces.

Genus 5th.

Præternatural Thirst.

These diseases are always symptomatic.

1. *Sitis nimia.*

- α Polydipsia from an increased circulation.
- β Polydipsia from a dryness of the fauces, from too great an evacuation of humors, v. g. from hæmorrhage, diarrhæa, diabetes, &c. &c.

R r 2

γ Poly-

γ Polydipsia from spasm.

δ Polydipsia from an acrimony of the humours irritating the mouth and fauces.

2. *Adipsia*.

α Adipsia from a præternatural humidity of the mouth and fauces.

β Adipsia from an acid acrimony.

γ Adipsia from diminished sensibility

δ Adipsia *spuria*. This arises from a singular antipathy or delirium; hence it is only observed in hysterical and maniacal persons.

Genus 6th.

A præternatural state of the organ of taste may consist either in an excess, or deficiency; or lastly, in a depraved sensation.

1. *Sapor nimius*. This takes place from increased sensibility, and occurs frequently to those who labour under hysterical, hypochondriacal, or nervous diseases; and is not uncommon in scorbutic and apthous affections of the mouth.

2. *Sapor imminutus*. (*Agheusia* of Sagar & Sauvages.) The seat of this affection is either in the organ of taste, the *portio mollis* of the fifth pair of nerves, or in the brain; hence the cure varies, and consists either of resolvent, or of irritating collutories.

3. *Saporis depravatio*. *i. e.* When from a morbid cause the flavour of the substance is, to the palate, altered from its natural taste. This may arise

α From ulcers of the tongue, mouth and fauces, which are to be cured by mercury, if venereal, &c.

β From the stomach: when it arises from this source, it generally happens soon after

ter

ter eating or drinking, disappears when digestion is completed, and the taste is mostly of a bitter, acid, rancid, or putrid nature. It is cured by emetics, absorbents, and stomachics *pro re nata*.

- ✓ From diseased halitus of the lungs. This is known by the absence of the species already enumerated, and the presence of symptoms of cacochymia, fever, and a fætor of the breath. I have already proved that the lungs secern from the blood more corrupted and phlogisticated particles than the whole surface of the body,* which may adhere to the tongue and induce a depraved taste, as various as the nature of the morbid particles. However, according to Zeugen, a bitter taste from the halitus of the lungs always arises from an abundance of rancid, bilious, and phlogisticated particles. †

3 From impurity of the tongue, as

1. Dryness, from a tenacity of the mucus, which soon becomes thick, adhering to the tongue, and at length becoming dry. At the beginning the tongue appears white at its base and middle, but the sides remain clear from the continual friction they suffer. The white colour is soon changed to a yellow, which, after a little, becomes brown and dry, adhering so firmly to the tongue as to render its separation from the cuticle impossible. This is mostly observed in fevers.
2. Faulty secretions of the mucus of the fauces and tongue.
3. An impurity originating from a morbid halitus of the lungs.

* Vide Wedekind Medizinische Auffätze, p. 370.

† Vide Zeugen dissertat. Inaugur., de sapore amars. Moguntia, 1789, et Salzburg Mediz. chirurg. Zeitung, 1790, nro. 28. p. 44.

The chapter concludes with some practical remarks upon apthæ.

The third chapter includes the general cure of diseases of the primæ viæ, in which the usual methods of cure in common use are pointed out.

‘ When poisons or medicines acting as such are swallowed, and their nature ascertained, their antidotes, if they have any, should be immediately exhibited; thus if any medicine or poison, of an acid nature, be received into the stomach, alkalines should be administered, by which a union is effected, the product of which is innocent to the stomach; hence a large quantity of soap mixed with water is, according to the celebrated Hahnemann, a powerful antidote against corrosive sublimate. When, however, the nature of the poison is not ascertained, respect must be had to the symptoms, and, in particular, to the degree of irritability of the primæ viæ of the individual. In most cases the use of absorbents and diluents is beneficial. When inflammation is present, which is known by its characteristic signs, it is necessary to have recourse to blood-letting, which must be repeated according to circumstances, with the antiphlogistic treatment. Secondly, attention should be paid to the evacuations, which, although necessary to get rid of the offending substance, may, nevertheless, be so great as to endanger life. In this case, obvolvents, with the use of astringents and opium to allay the irritability of the parts, are beneficial. Thirdly, it is also of the utmost importance to attend to the effects which may arise in the other parts of the body; as apoplexy, which may arise from a congestion in the head, and retention of urine from spasm of the bladder.

‘ When vomiting, diarrhæa, perturbation, &c. are produced by worms, the professor recommends calomel, if the strength of the patient be not very much impaired; but, when that is the case, he advises the use of milk and opium to allay the irritation;

tion; and when the state of the patient is such as to contra-indicate the use of both cathartics and astringents, the fantonic powder, or the infusum helminthochorti may be successfully employed.

‘ When blood is effused in the alimentary canal, its corruption, the author conceives, may produce both vomiting and diarrhæa; yet, for the most part, he is of opinion, that these symptoms are produced by the increased irritability of the parts from which it escaped; for the human blood, unless in a very bad condition, appears to be as easy to digest as that of other animals. However, when any noxious effects are apprehended from an ill condition of the effused blood, the bowels should be gently opened by antiseptic remedies. With this intention he would employ flower of brimstone, with camphire and conserve of scurvy grafs.

‘ The same effects are constantly produced by the presence of pus in the primæ viæ, especially when it is ill conditioned. It is necessary here,’ says the Professor, ‘ to ascertain, whether the pus is formed in the primæ viæ, or whether it is deposited into them from some neighbouring part or viscus. In the first instance, the use of vomits and purgatives are strictly forbidden, as they effect much mischief by the irritation they produce. The absorption of the pus is to be prevented by antiseptic food and medicines. In both cases the trial of enemata is recommended, and the section concludes by enquiring, whether the evacuation of the pus is best assisted by gentle purgatives, or by antiseptic and corroborating remedies.

‘ There not unfrequently occur cases, where preternatural motions and excessive excretions arise, not from a material cause within the primæ viæ, but from other causes which reside in the parts constituting the primæ viæ; such are, increased irritability, inflammations, congestions of blood, ulcers, scirrhus tumours, &c.

* To allay increased irritability, a dry and cold diet, tonic medicines, gentle astringents, and warm cloathing are recommended.

‘ In inflammations, repeated bleedings until fainting is produced, and every thing to be avoided that can in the least irritate the stomach.

‘ The same method is to be adopted in congestions of blood ; vomits are always prejudicial, for under these circumstances their exhibition produces either vomiting of blood or gastritis.’

The second part of the work treats on the *causes* of diseases of these parts ; these are, according to our author,

1. An increased volume of the primæ viæ.
2. A preternatural irritation.
3. An insufficient chylopoiesis.
4. A superabundant preparation of chyle.
5. Acrimonies of the contents of the primæ viæ.
6. A stagnation of blood in the vessels, or a plethora, and
7. Organic diseases.

Each of these causes is reviewed by the author in separate chapters at considerable length ; indeed, so much so, as to bewilder the reader by their prolixity. His researches, no doubt, evince much laborious application ; but he appears to have carried them to an unnecessary length : it would be well on this, as on many other occasions, to remind authors of the old adage, “ a great book is sometimes a great evil.”

ART. LXVII. *Historia Systematis Salivalis Physiologicæ et Pathologicæ considerati; accedunt ex Eadem Ducta corollaria Chirurgica. Auctore JOANNE BARTHOLOMÆO SIEBOLD, M. & C. D. Cum II. Tabulis Æneis. Jenæ, 1797. Imported by BOOSEY, London.*

THE author, sensible of the deficiencies of former writings on this subject, here presents us with the history of the salival system, both in a healthy and a morbid state. The work commences with a review of all the writers in this department, in chronological order, from the earliest periods down to the present time.

The pancreas is considered by the Professor as a salival gland, and its anatomical and physiological properties accordingly pointed out; nothing new, however, or peculiarly interesting, is offered on the subject: the nature and uses of the pancreatic secretion, are as much enveloped in obscurity as hitherto.

The physiology of the salival system (which comprehends the anatomy,) is full and explicit, and the descriptions accurate.

The second section contains the pathology of the salival system; the diseases of these parts, their universal and topical, predisposing, and other causes, are fully and methodically considered.

At the end are subjoined beautiful plates of the glands, nerves, vessels, &c. of the head; these are given principally with a view to surgery, and the reader will find them referred to by the author in his anatomico-chirurgical corollaries, of which we select the two following.

COROLLARY I.

On the extirpation of the parotid gland.

‘It is really surprising,’ observes the author, ‘that a schirrus of the parotid gland, especially the method
of

of extirpating it, should have been so evidently neglected, that we may indeed say with the poet "*rari nantes in gurgite vasto.*" for unless amongst the writings of the systematists *Garengeot, Heister, and Van Swieten*; among the monographists, *Ern, Gotte, Schmidt, and John Eberth Ærth*; or in the observations now produced; no mention of it is any where to be met with.

‘ There are, certainly, many circumstances to be attended to, which it is the duty of the operating surgeon to investigate; lest, by an imprudent, unguided hand, he should divide the neighbouring carotid artery, and thus risk the life of the patient. The situation of the parotid gland, and its connections with this artery, from which it receives a branch, sufficiently point out how easily this accident may happen; for which reason, let the operator pay particular attention to those things which he ought to avoid, and to observe. The following remarks will, I think, be useful.

‘ 1st. The operator, after having cut through the integuments, (which is most commodiously done by a longitudinal incision from the meatus auditorius towards the middle of the neck,) and separated the lips of the wound which should be only superficial, ought next to attend to the cellular membrane surrounding the scirrous gland, which should be divided very gradually, that the small vessels supplying the gland may contract within the cellular membrane; by which means, the effusion of blood that would otherwise happen, is avoided without the least difficulty.

‘ 2nd. In order that the tumour may be better brought into view, its shape and connection with the neighbouring parts seen and felt; it should be slowly, and gradually drawn out, which may be done either with a tenaculum, or a ligature round the middle of the gland, raising it gently.

‘ 3rd. Let the surgeon use his fingers in this operation, as well as the knife, and with them perform every

every thing that can be done safely, without instruments. The tumour, which is surrounded on all sides by cellular membrane, should be gradually and cautiously separated from it by the fore finger.

‘ 4th. The knife ought to be applied at the superior part nearest to the temple, and the parts divided towards the inferior and anterior part, that the operator may avoid the angle of the jaw, under which the carotid artery lies concealed, and then make the incisions towards the meatus auditorius. Besides these things, encheiresis should be particularly observed; because, at the inferior and anterior part, beside the carotid, there are several vessels from which the parotid either receives small branches, or is situated near them; and if these are divided, an hæmorrhage ensues, which considerably retards the progress of the operation, and endangers the life of the patient.

‘ 5th. But, if any one through fear, may think it more safe not to use the knife in the bottom of the cavity in which the parotid is enclosed, the best method will be, (after having divided the integuments, and separated the gland from the neighbouring parts as much as possible,) to apply a ligature round its root, that by gradually drawing it tighter, the effusion of blood may be prevented, which cannot be entirely avoided when the whole tumour is removed by the knife. In this manner (by ligature) the branches of arteries going to the parotid gland are compressed, and the tumour radically removed; by which means the hæmorrhage is either entirely prevented, or easily suppressed.

‘ When the parotid is removed, and the effusion of blood quite stopped, small pieces of sponge-tent are to be put into the cavity; the wound is then to be bound closely, and compressed for some time with the hand, in order that the blood may be effectually suppressed.’

This finishes the corollary on the extirpation of the parotid gland; an operation attended with great difficulties,

ficulties, and to be undertaken with the greatest caution. We hardly need observe, that besides the carotid artery, there are the great intercostal nerve and par vagum close in the neighbourhood ; and which are of the highest importance.

COROLLARY II.

On the extirpation of a schirrous submaxillary gland.

‘ It can hardly be denied,’ the author remarks, ‘ that removing a submaxillary gland is attended with some danger ; for, from the division of vessels scarcely to be avoided, an hæmorrhage arises, which requires the hand of a skilful and dexterous surgeon to stop. It is likewise necessary to pay attention to both arteries and veins in the vicinity. If any one, therefore, wish to have a clearer description of, and be more intimately acquainted with, *the field of action*, I refer him to the annexed plates, in the first of which the submaxillary gland is seen as it appears by looking at the exterior part of the face ; but in the other, all the parts surrounding it, as well as the inferior maxillary bone, are brought into view.

‘ Amongst the arteries, the external maxillary with its branches going to the submaxillary gland, is of great importance, and requires that great attention be paid to its serpentine direction, which an experienced and skilful surgeon may pass unmolested, although he cannot avoid cutting some of its smaller branches. Much circumspection is likewise requisite to avoid the labial and submental arteries, from which there are always branches sent off to this gland.

‘ Of the veins, the anterior, facial, and glandular are almost always divided ; and the trunk of the former, and the submental and posterior facial are also endangered.

‘ As to the nerves which are to be divided, the superior anastomosing branch of the neck, the minute branches

branches sent to the platysma myoides and skin, the mylo-hyoideus, and small branches of the maxillary ganglion by which the submaxillary gland is supplied, must be cut through, as well as the lingual nerve, which is the third branch of the fifth pair. Besides these, there is the middle lingual nerve, situated in a cavity at the inferior part of the submaxillary gland, which should be carefully avoided.

‘ The small branches only of Wharton’s excretory duct, or the duct itself, may chance to be divided.

‘ Amongst the muscles, the platysma myoides chiefly suffers ; yet the anterior belly of the dygastric, the mylo-hyoideus, and stylo-hyoideus are readily liable to be injured.

‘ As to the other parts, more remote, the second plate will explain them more particularly.

‘ A much greater difficulty arises, if the submaxillary gland adhere to the parotid, or if both be diseased ; in which case the tumour possesses a much more considerable extent : but, if one of them only be affected, it is to be separated from the other by the knife. The same unpleasant circumstances happen, if the sublingual gland should likewise be diseased, since it is commonly, more or less, intimately connected with the submaxillary ; a very particular attention and caution are here necessary, on account of the imminent danger to which the sublingual artery is exposed ; which, as well as the submental, gives off branches to this gland, in every direction. A case of this kind offers many difficulties by the number of vessels that are divided, and the ensuing hæmorrhage which is not stopped without great difficulty. Pressure in this case will certainly succeed best, since there is no convenient place to apply a ligature. In doubtful cases it is extremely necessary for the operator to make sufficient room for himself, between the symphysis of the inferior maxillary bone and the cornu of the os-hyoides, carrying the knife a little backwards from the angle of the inferior maxilla,

maxilla, that he may not be too near the external carotid artery, and internal jugular vein. The incision should not be made longitudinally, but transversely, and a little obliquely, that is, parallel to the inferior maxillary bone, that the scar may be hid as much as possible. The tumour must be very gradually drawn out with the tenaculum, which is to be assisted by introducing the fore-finger, to prevent the vessels being injudiciously divided, and thus to diminish the effusion of blood.'

'Although there have been, and may still exist, surgeons, who refuse to operate for these, or any other glands of the neck, alledging, as a reason, that it is a very dangerous operation, on account of the excessive effusion of blood; yet, from many examples, it appears, that it can be done with safety, provided the surgeon proceeds cautiously, and in a proper manner, and is sufficiently skilled in stopping expeditiously the hæmorrhage which is almost unavoidable.'

ART. LXVIII. *A Treatise on the Disorders of Childhood, and Management of Infants from the Birth; adapted to Domestic use.* By MICHAEL UNDERWOOD, M. D. Senior Physician to the British Lying-in Hospital, &c. 3 vol. twelves, price 10s 6d. MATTHEWS, London, 1797.

WE had occasion to notice the former edition of Dr. Underwood's work in our second volume,* and to enter at some length into its nature and execution. It is unnecessary, therefore, to do more on the present occasion than to observe, that by the enlargement and correction it has undergone, and especially by its being more particularly fitted to the comprehension of the general reader, its utility is in a proportional degree enhanced.

* Vide Medical Review, vol. 2, p. 232.

ART. LXIX. *The Anatomist's VADE MECUM, containing a concise and accurate Description of the Structure, Situation, and Use of every Part of the Human Body. To which is added, an Explanation of Anatomical Terms. For the use of Students, &c. By ROBERT HOOPER, M. D. &c. 12mo. 159 pages, price 3s. BOOSEY, London, 1797.*

WE cannot give our readers a better idea of the present performance than in the words of the author: adding only, that it appears to us fully competent to answer the purposes intended by the writer.

In the following compendium, Dr. Hooper observes, the intention has been to present to the student an useful anatomical conspectus, or pocket manual of anatomy, giving a short, but accurate description of the different parts of the human body; with a glossary or explanation of the principal terms used in that science. The utility of such a performance will be generally acknowledged, especially when we consider, that there is no work altogether on a similar plan.

The author has divided the anatomy of the human body into nine parts.

1. In the *Osteology* will be found the principal divisions, eminences, cavities, &c. &c. of all the bones, with their synonyma.

2. The *Syndesmology* is short, but conveys a clear idea of the connexions of bones.

3. The *description of the muscles* is conducted after the much approved plan of Innes. The name, origin, insertion, and use, in one concentrated view, the author hopes, will convey a perfect knowledge of their situations and functions.

4. The *Bursalogy* is introduced in a compendious form, and deserves the attention of the student.

5. The *Angiology* exhibits an explicit description of the different arteries, veins, and absorbents.

6. The

6. The *Neurology* is divided in some respects different from the generality of writers on this subject.

7. The description of the *Glands* is short.

8. The *Splanchnology* contains all the most useful information on that head, reduced into a very small space. And,

9. The *Hygrolgy* gives the definition, nature, and uses of all the fluid parts of the body as considered in the doctrine of the fluids.

The motives that induced the author to form and collect together, in one small pocket volume, this elementary production, to which he has added those technical terms, and Greek derivatives, that occur most frequently in anatomy, were his having himself experienced the want of such an assistant, when applying to that branch of philosophy. He therefore solicits permission to recommend it to students, not as a work wherein any thing new is to be met with, but merely as their occasional companion, in the prosecution of their studies.

*Non docentibus, sed discentibus ;
Non eruditis, sed erudiendis.*

ART. LXX. *Extrait d'un Memoir sur la Medecine Morale, &c. Extract of a Memoir on Moral Medicine. By M. GILBERT, Physician to the Army, &c. &c. (Magazin. Encyclop.)*

THE author, having defined medicine *the art of imitating nature in her processes of conservation and repair*, takes a rapid view of the different epochs of medical history. The light and influence of the spirit of philosophy, he observes, on the arts and sciences, have at length banished those brilliant, but vain systems, which have so long retarded the progress of true medical observation. The revolution in medicine preceded, in France, that in politics ;
analogy,

analogy, governed by cautious reasoning, has succeeded to the brilliant hypotheses of the schools; methodical and strict inductions have taken place of conjectural theories; the moral is no longer separated from the physical being. The practice of medicine, dictated by prudence, and founded in reason and experience, is more frequently crowned with success.

M. Gilbert investigates the interesting two-fold question; of the affections of the mind on the organic functions, and of the organs on the powers of mind. He inquires what advantage the sick may expect from the physician, who makes the knowledge of the human heart a part of his medical studies.

Three questions offered themselves to the author in this discussion: viz. Have the affections of the mind an influence on the animal œconomy? In what way do they act? What means does this knowledge afford to the practical physician, of employing the mental affections in the cure of bodily disorders?

Speaking of hope in its application to medicine, M. Gilbert remarks, that in vain will the physician expect to impress this beneficent allusion on the mind of the patient, whose confidence he does not possess. Hope dies the moment confidence is lost: to obtain this, therefore, is an essential duty of the physician: but it can only be done by talents, probity, discretion, sensibility, and attention. The best physician, says Celsus, is he that is most with his patient. All other means, in fact, of acquiring confidence, are deceptive and immoral. They may serve to promote the fortune of the physician, but never his real fame. It is the difference of these means which distinguishes the empiric from the man who feels the dignity of his profession. ‘Happy the man,’ says M. Gilbert, ‘who, in the course of a life agitated by so many storms, and subjected to so many maladies, finds in his physician, a friend, a comforter, and a

brother. Happy the philosophic practitioner, who never hears the cry of the unfortunate without emotion ; who can sometimes neglect the wealthy, in his trivial indisposition, but who never passes by the cottage of the poor without visiting and alleviating his misery ; and whose presence alone, in the midst of a wretched family, diffuses calmness, hope, and security'.

ART. LXXI. *Extrait d'une Lettre de M. Mascagni à R. Desgenettes. Extract of a Letter from M. Mascagni to R. Desgenettes. July, 1797.*
(Magazin Encyc.)

DR. CHIARENTI of Pisa has made various experiments on opium dissolved in the gastric juice of carnivorous animals, mixed with hogs lard, and applied to the skin of animals by friction. The opium thus prepared and administered was found to produce the same effects as when exhibited by the mouth.

He extended his inquiries to other substances of the *materia medica*, as the squill, the cinchona, and rhubarb : these different matters were united with the gastric juice and hogs lard ; sometimes with the gastric juice only. On applying them to the surface with friction, the same effects were observed to follow as when inwardly given ; that is, the squill proved diuretic, the rhubarb purged, and the cinchona removed intermittent fevers.

The same substances were in like manner dissolved in the gastric juice of herbivorous animals, and in the human saliva ; introduced by the skin as before, their effects on the system were evident.

After the success of these experiments, it is easy to see the advantages which may accrue to medicine
from

from their application. The disgust of certain persons against particular drugs, is almost invincible; and in children it forms an obstacle to the cure frequently of the greatest importance. In multiplying experiments on this subject, a number of other medicines, no doubt, will be found capable of being exhibited in the same manner. In many cases, this mode of exhibition may be more certain and successful than even by way of the stomach. The irritability of this organ, and of the intestines, is sometimes so great, as to reject immediately whatever is given. The variety of fluids, likewise, found in the course of the alimentary canal may, in some instances, change the properties of substances given by the mouth, and thus render that inert, which, when introduced by absorption, would exert active powers.

A field is thus opened for the improvement of medical practice, not altogether new, indeed, but which has hitherto been little cultivated. We hope soon to see this subject pursued in our own country.

ART. LXXII. *The Soldier's Friend: or, the Means of preserving the Health of Military Men; addressed to the Officers of the British Army.* By WILLIAM BLAIR, A.M. Surgeon of the Lock Hospital, &c. 12mo. 155 pages, price 2s. 6d. or 4 guineas for 50 copies on common paper. LONGMAN. London, 1798.

THE peculiar exigency of the present times, the author observes, and the unaccustomed hardships to which numerous bodies of men may soon be exposed, give a considerable degree of importance to the subject of the present essay. It contains the result

of his own observation, and the substance of what has been written by the best authors on the means of preserving the health of military men.

Health is the main spring of action, both in public and private affairs. The health of an army is of equal importance with its existence. In all European armies, more men are sacrificed by disease, than by the sword; and the laurel is at least as often withered on the hero's brow by the pestilential blast of contagion, as torn from it by the nervous arm of strength. It is manifest, however, from experience, that this greatly depends on the regulations to which an army is subjected. That officers should, therefore, have every degree of information given them on this subject is highly necessary; for by their exertions, chiefly, it must be, that proper and wholesome plans are adopted, and carried into effect.

The present performance treats amply of food, clothing, exercise, and all the other important points, on which the health and comfort of the soldier in a great measure, and indeed altogether depend.

ART. LXXIII. *A New System of Physiology, comprehending the Laws by which animated Beings in general, and the Human Species in particular, are governed, in their several states of Health and Disease.* By RICHARD SAUMAREZ, Surgeon to the Magdalen Hospital. 2 vol. Octavo, 990 pages, price 14s. Cox. London, 1798.

‘NOTWITHSTANDING,’ the author observes, ‘the boasted improvements, which, in these latter days, physiology has attained; although its professors have investigated the solitary functions of particular organs, and have published many important detached and isolated facts; none have ventured to collect and connect these together—or to trace the dependence

dependence and relation that subsist between the different organs, by which a whole system is constituted. The cause is probably to be ascribed to the uncertainty that has hitherto existed, with respect to the power or efficient cause, by which these various effects are produced. Hence the variety of systems that have been formed with a view of accounting for the phenomena of organic life.

‘ By some (the materialists) life and action are supposed inherent in matter, and both to flow from the properties which it essentially contains. By others (the Brunonians) life is affirmed to be merely an effect of which action is the cause. This doctrine will be found merely a perverted modification of the former one, connected with some tenets which it has borrowed from another source. There subsists, however, a small band, of which the late Mr. John Hunter was the dignified chieftain, who disclaims the doctrine which ascribes to matter the power of forming itself into organs, or which supposes that life can ever arise out of death; much less that it can ever be an effect only, of which matter is the cause. Had the two former systems, like many others that might be mentioned, been generated, and died like the ephemeris of a day, it is probable that the following work would never have been written. But when I read the late translation by Dr. Beddoes of the *Elementa Medicinæ* of Dr. Brown, in which he brings proof that it is the prevailing doctrine over Europe, as it unquestionably is in this country; I thought that it would be criminal in any one to remain silent, who saw the errors and the pernicious tendency of that doctrine, and the evils it produces in its application to practice. To explore the nature of the principle of life, and assert its power—to investigate the attributes of organized life, as the instrument by means of which the phenomena of organic action are produced, and the final cause of animated existence attained throughout

S 6 3

the

the universe, constitute the especial object of this work.

‘ I am aware that I have extended the power of life beyond what has been hitherto supposed, and that some will fancy it to be visionary and absurd. I shall however be ready to support my opinion whenever called upon.

‘ I have not formed those opinions from transient observation : on the contrary, I avow that I have reflected on them with patience and intensity : so that whatever errors may exist in the doctrinal part, arise from my ignorance of the subject.

‘ It has been by examining the structure, and beholding the action of different animated beings, from the most simple to the most complicated ; by comparing the states of health and of strength, with those of weakness and of disease ; of different organs and of different classes of animated beings, when they severally exist either in their active or torpid state, which constitute the sources from whence my materials are principally derived ; so that I have found the study of the subject always connected with the practice of it.

‘ There are, however, various parts about which we still continue ignorant. I need only mention the brain and nervous system ; those important organs, through the energy of whose power it is, probably, the different functions of the machine are carried on. What I have said of them, may be considered as an attempt to throw out some idea that may tend to excite further investigation.’

In his execution of the extensive work before us, Mr. Saumarez is in many parts original : it is but justice, however, to add, that a passion for novelty does not appear to have led him to a hasty adoption of opinions on slight or trivial grounds. His arguments are in general well supported, and his conclusions cautiously deduced. As a whole, it certainly bespeaks the industry and genius of a writer, who
dares

dares to think for himself, unfettered by prejudice or authority.

It will be our endeavour to give our readers a cursory view of the contents of these volumes, insisting more particularly on such parts as attract our notice by their novelty or importance. But we have no hope that the sketch it will be in our power to give, can be satisfactory to the curious inquirer into these subjects ; to such we recommend the perusal of the work itself.

The first chapter treats of the general properties of common, of living, and of dead matter. Life is defined, the principle (*i. e.* the efficient and primary cause) by the energy of which various species of matter are converted to one kind under one system, so that the matter thus converted possesses the power of resisting the operation of external causes, and of preserving itself from decomposition and decay.

In the second chapter the subject is continued. The properties of living matter are shewn to be general and particular. The general or preservative power is seen in the whole vegetable and animal creation ; in the seeds of plants ; in the eggs of birds ; and in the torpid state of animals. As soon as these are placed in media fitted for their action, whilst they possess an aptitude to be acted upon, the living principle becomes roused from its dormant state into energy and action, and thus each becomes possessed of its particular powers in addition to the common or preservative ones. Life, therefore, may and does exist without organic action ; but organic action cannot exist without life.

In the third chapter the properties of common matter, with relation to life, are pointed out. In this view common matter is destitute of all power. Its sensible qualities are destroyed by the assimilating organs of living systems : these are designed to reduce

substances of different kinds to one,—that this one substance may be in harmony with the system, and be fitted to be acted upon, and converted by the specific power of different organs into various shapes.

The author next states the doctrine of the materialist, and endeavours its refutation on the ground of the imbecility or want of power in matter; that it must, therefore, be incapable of forming itself into organs which possess various powers. From an examination of the phenomena displayed by common and living matter, he concludes, that one is totally opposite and contrary to the other.

The doctrine of the oxygenous philosophers is next examined, and shewn to be nearly the same with that of the materialists. That oxygene forms one of the constituent materials, both of animals and vegetables, may be readily admitted; by the one it is especially received in the act of inspiration, by the other it is received by absorption; but that it possesses either life or irritability is highly improbable. It is the subject matter only upon which the lungs of the animal act, and which they assimilate and convey to the mass of blood. It is thrown out from vegetables as excrementitious. If we were, therefore, to admit the hypothesis, that the principle of irritability, or of life, resided in the air taken in, we ought to conclude that carbone or azote constituted the principle of vegetable life.

The author well observes, that the mind turns away with nausea from the contemplation of causes that lead to such unseemly conclusions; it receives with slight, and is disposed to hold up to derision the philosophy of those, who know not how to separate the effect from the cause, the subject matter of a thing from the power by which it is governed, and to which it is wholly subservient. The oxygene which the lungs receive is absolutely dead, with respect to the
system,

system, as much as the food which is introduced into the stomach : it is by the energy of these organs that these different substances are made to receive the participation of life, and made to answer the purposes of melioration and support.

Chap. 6th treats of the Brunonian doctrine, the insufficiency and inconsistencies of which the author endeavours to point out. After having stated the general and fundamental principles on which it is built, and which are stated to be so plain, as to be easy of comprehension by the meanest capacity ; so beneficial to mankind, that the science of medicine is simplified, and the cure of disease rendered more certain than it was before, he proceeds,

‘ So far, however, from this system of medicine being easy of comprehension, to me it appears involved in the most dire confusion that can be conceived. It makes life to be an effect instead of a cause ; it makes life to consist in excitement, and excitement or life to arise from substances that are naturally dead. Instead, therefore, of the principles being founded in truth, they lead to error ; so far from consistency being apparent in the whole, we shall find there is a perpetual jarring and contradiction between the text and the context of the different parts.

‘ The parts which appear to me founded in truth were propagated by the late Mr. Hunter, long before Dr. Brown. It is, however, probable that Dr. Brown wished to conceal the plagiarism of his knowledge, by giving different names to principles virtually the same. Let us therefore compare both systems together, and we shall soon discover the affinity they bear in points the most essential. Mr. Hunter supposed, that every animated system possessed a living principle, and that this living principle was the cause of the phenomena of life. Dr. Brown, instead of retaining the term living principle, abandons it, and invents excitability in its stead. Mr.
Hunter

Hunter, supposed that this living principle was susceptible of being acted upon by stimuli. Dr. Brown supposed, that excitability was acted upon by exciting powers, or the stimuli of Mr. Hunter. Mr. Hunter supposed, that these stimuli, acting on the living principle, produced action. Dr. Brown thinks, that the consequence of these exciting powers acting upon the excitability produced excitement. In this ultimate effect produced; in this excitement, great and striking indeed was the difference they both entertained. Mr. Hunter supposed it to be an effect only of life and organization. Dr. Brown imagined that this excitement itself constituted life, and was virtually its source: the source of life indeed at its termination.

‘It is at this terminated origin, or originated termination, where life begins, that Dr. Brown stops: on the contrary, Mr. Hunter pursues his principles to their ultimate effects. He investigates the power of life in the conversion of dead into living matter, and the formation of chyle; in the change chyle sustains to its perfect commutation into blood, and to the use of blood in the support of the system: and he farther ascertains the various properties it contains, and the particular uses for which it is designed. It appears to me, that when Dr. Brown takes Mr. Hunter as his guide for principles with new names, he is generally right; but when he abandons the road Mr. Hunter had etched out for him, and explores one of his own; when we see Dr. Brown solitary and alone, we then behold principle founded in error, and its application to practice most dangerous.

‘The great error of the Brunonian system appears to proceed from this: Instead of ascribing power to the animated system, in which it evidently resides, and mere aptitude and fitness to be acted upon in the matter received, whether it be water and air to vegetables, or the different articles of diet to different animals; he makes the matter, which every
animated

animated system receives, to possess the power, whilst the system itself he conceives to be the thing acted upon: he consequently is led to ascribe power to that which is naturally weak, and weakness to that which is essentially strong: he calls the various substances in which the excitability acts (the living principle) *powers*; agents that act, instead of things that are acted upon: he makes life to come out of the body, instead of residing within it: instead of making action the effect of life, he makes life the effect of action; *for in action (excitement), says he, the true cause of life consists, the effect of the exciting powers acting on the excitability.* Life, therefore, does not consist in the excitability alone, or in the exciting power alone, but in both together.

‘ It must however be remarked, that in different parts of his book he expressly says, that the exciting powers constitute the true cause of life. A mutual relation is however supposed to subsist between the excitability and the exciting powers.

‘ When too great excitement (i. e. too much life) is induced, indirect debility follows; because the excitability becomes defective. On the contrary, when the stimuli are withheld, direct debility takes place: although the state of direct debility is induced by the subtraction of the exciting powers, it is notwithstanding supposed, “ *that the excitability is then in excess*: so that when the excitability of the system is most strong, the excitement (or the true cause of life) ought to be most weak; and, on the contrary, when the excitement is most weak, the excitability ought to be most strong; or, in other words, the excitability is supposed to become more abundant in proportion to the weakness of the exciting powers; and on the contrary, in proportion to the strength of the exciting powers in producing excitement, the excitability becomes proportionally lessened and diminished.

‘ If this fundamental proposition of his doctrine were true, animated beings ought to begin without
excitability

excitability or animation, and end with a total accumulation of it. Excitability would be most languid when it is known to be most active, as in the foetal and infant state, in the evolution of the system, and in the organization of its various parts: it would be most active when it is known to be most languid, and especially when it is totally exhausted, as in the oldest period of old age; and there ought then to be a total accumulation of this excitability by the insensibility to the action of stimuli, and by the weakness and cessation of all excitement.

‘ The abundant condition of accumulated excitability would be most apparent when the system is in a paralytic and torpid state, and when there seems to be a general apathy of the whole: it ought to be the case in syncope and suspended animation, whether from submersion or the effect of cold; when the organs through which the excitability acts in producing excitement are no longer susceptible of the action of stimuli. If this species of relationship actually existed between the exciting powers and the excitability, not these false consequences only would ensue, but it is also very evident, that if life be the forced state which Dr. Brown has proclaimed, it might be gauged or varied, exhausted, augmented, or renewed to a high or a low state, and back again from a low to a high one, in proportion as he chose to infuse into the system brandy or water, heat or cold, oxygene or azote, pleasure or pain, joy or grief; that he could make excitability to die, and again to live; and consequently that life itself was what he states it to be, a forced state; merely produced and preserved by the operation of external powers.

‘ In all stages of life, therefore, Dr. Brown supposed that man and other animals differ from themselves in their dead state, or from any other inanimate, in this property alone; *they can be affected by external agents as well as by certain functions peculiar to themselves, in such a manner that the phenomena peculiar*

culiar to the living state can be produced. This proposition extends to every thing vital in nature, and therefore is applicable to vegetables.

‘ This assertion is not a true one ; living animals differ from dead in this respect ; they possess the power of affecting external substances (falsely called agents), and of performing certain functions peculiar to themselves ; and the dead state differs from the living in this, that in the dead state they are affected by external agents, and entirely changed by them ; so that the very substances which contributed the most to the support of life when it was in action, accelerate the progress of decomposition, as air, heat, &c. after those actions have ceased.

‘ Dr. Beddoes himself, aware of these consequences, is obliged to confess that his principal tenets, if they be rigidly examined, will be found inconsistent with his own important doctrine of the accumulation of excitability. “ It appears to me,” says Dr. Beddoes, “ that according to his first chapter (xviii) living beings ought to have proceeded through languor to death in an unbroken tenor of wakefulness, and that all the images and lamentation which sleep has suggested to the poets would have been lost ; for he who assigns that a certain portion of excitability is allotted to every living system, by that very assumption denies its continual production, subsequent diffusion and expenditure, at a rate equal to the supply, or greater or less. That the brain is an organ destined to secrete the *matter* of life, he could never have supposed ; otherwise he would not have expressed a doubt whether excitability be a quality or a substance.” p. 138.

‘ That the matter of life, as he falsely calls it, is not resident in the brain alone, was proved by various facts I mentioned, of the *fœtus in utero* being frequently destitute of brain altogether, although every other part of its system was completely evolved ; an evident proof that the powers of life in general are
most

most strong, and independent of organization in particular.

‘ The life which constitutes the power of the system in its nature is definite; in point of evolution it is bounded; in point of duration it is circumscribed; it is gradually developed and evolved; and after having attained its period of perfection, it gradually verges to decay, and becomes decomposed into its constituent parts: it verges to decay by an exhaustion of the living power, and a consequent inability to act upon extraneous substances, by a total loss of power, either of acting upon external substances, or resisting their operation. External things therefore act upon the system, enter into a chemical union with the parts of which it is composed, and the phenomena of putrefaction or fermentation ensue, as the means which nature employs to bring organized matter into a disorganized state, and, finally, to resolve it into a common one.

‘ Thus then it appears that the operation of external things upon the animated system, falsely and unphilosophically called by Dr. Brown *exciting powers*, has a constant and unremitting tendency to weaken the organization of the part, to diminish or to destroy the participation of life which this organization had received, and, finally, to prevent excitement or action, the ultimate effect of this vital principle acting through the medium of the organs of which the system is composed.

‘ It was in reversing this order of things, instead of following it, that Dr. Brown fell into confusion and error; he mistook excitement for a cause instead of an effect; he saw it an effect produced, and falsely believed it to be a producing cause; an effect produced, occasional and not constant, by the organs as the instrumental cause, from the energy of Life, the primary and essential cause in which the source and power of action essentially resides.

‘ Instead

‘ Instead of suspending the phænomena which every animated system displays to the excitability, which he at first allows, he either divides the cause by which these phænomena are produced, by ascribing them to the exciting power acting on the excitability, or else he abandons altogether the power of the excitability (of life), by ascribing the production of the phænomena to the exciting powers alone, or things external to the system: he therefore asserts that the operation of this external power produces excitement, and *that excitement itself constitutes the true cause of life.* P. 14.

‘ It is very evident to me, that Dr. Brown had no definite ideas whatever of the relation which different things bear to each other; that he in consequence has confounded power with weakness, weakness with power; frequently mistaking one for the other, as well cause for effect, as effect for cause.

‘ The most common observation ought to have taught him, that although power in the abstract is a positive principle; yet, when it is considered as residing in any subject whatever, it no longer continues a positive, but immediately becomes a relative term: the relation of power which the excitability (life, or living system) bore to the things by which it was surrounded, depended on the weakness or aptitude they possess, not of exciting, but of being excited upon; not of changing, but of being changed; not of producing action according to the nature of each, whether bread or meat, brandy or water; but of becoming subservient to the power which the excitability possessed in which it resided, and by the energy of which it was displayed in the production of action.

‘ The exciting powers, therefore, according to him, constitute the cause, of which excitement is the effect; and in this effect, in this excitement life is formed, and continues to subsist; to subsist indeed no longer than the exciting powers continue to
act;

act; to cease the instant they are subtracted and withheld.

‘It is therefore necessary for me to enquire what are these life-producing powers which possess this distinguished faculty of imparting life when it is exhausted; of diminishing life when it is augmented, and of renewing life when it is dissipated.

‘According to him, they are various in number, they are both mental and corporeal. I shall not extend my enquiry to those that have a direct and immediate tendency to destroy life, instead of producing it, and which he has introduced in his Vocabulary, “such as *poisons*, *contagions*, or those that proceed from the energy of mind, as thinking, emotion, and passion, muscular contraction, and the functions of the body itself.” I shall confine myself to the consideration of those articles which he has especially enumerated and arranged, and which he supposes possess in a distinguished and graduated degree the power of producing life or excitement. At the head of these are, 1. Opium, 2. Spirituous Liquors, 3. Musk, 4. Cinchona or Bark.

‘The first of these life-producing causes is a juice extracted from a well known vegetable called poppy: it is generally obtained by boiling and par-boiling the heads until an extract is formed: (this extract dissolved with alcohol makes a tincture): after the extract is obtained, and set aside for months and years, and when it no more resembles the living vegetable from which it was procured, than it does the human system which it is destined to resuscitate, or than alcohol does the vegetable by the decomposition of which it is produced.

‘The second is Brandy. It is produced in different countries from different substances: in warm climates it is the product of the first stage of fermentation which grapes sustain; it is produced by the death of the vegetable, in consequence of which it becomes decomposed and resolved into a common state. In

this country, Alcohol is obtained by distillation from stinking and damaged wheat or barley.

‘Thirdly, *musk* is an animal substance produced by the excretory gland of an animal of the feline class; this gland is situated close to the anus of the beast, and, according to Dr. Brown’s opinion, is the third in rank of life-producing causes in man.

‘The fourth is Cinchona of Linnæus, or what is vulgarly called Peruvian Bark. This substance is the fourth in order, and which is supposed to possess the power in the fourth degree of producing excitement or the true cause of life. We have a particular and familiar example of the action of bark upon animal matter, when animal matter has not the power of acting upon bark, or at least when there is a mutual action between both: when the bark, the exciting power, acts upon the excitability which the skin contains, the process is called tanning, and the thing produced is called leather: there is an union that takes place between both, between the bark and the skin. More need not, I believe, be said upon the subject to make it more absurd than it *prima facie* appears.

‘These are the exciting powers of Dr. Brown, these are the effects that they invariably produce, and which evidently prove that life is not a forced but an original state; that it is not produced or preserved by the *operation* of external causes.’

We are not sorry to see the errors of the Brunonian system thus combated by an able champion. It happens with this theory, more than with any former one, that its errors are not merely speculative, but lead to the greatest practical mistakes. Indeed it would be no easy matter to calculate the mischief which it has occasioned, in the hands of young and inexperienced practitioners. When we find indubitable proofs offered ‘of its ascendancy over men’s minds in different parts of Europe; and that in the

celebrated university of Pavia, there is hardly a student, *endowed with talent*, who is not a Brunonian;* it is surely high time to examine its principles, and to refute its errors.

In a future number we shall pursue our account of Mr. Saumarez' work.

ART. LXIV. *Oratio ex HARVEII Instituto Habita in Theatro Collegii Regalis Medicorum Londinensis, October 19, M.DCC.XCVI. A GULIELMO SAUNDERS, M. D. &c. 4to. 28 pag. pret. 3s 6d. PHILLIPS, London. 1797.*

ART. LXV. *Oratio ex HARVEII Instituto, &c. A. ROBERTO BOURNE, M. D. &c. MDCCXCVII. 4to. 35 pages, price 3s 6d. OXFORD. 1797.*

WE should not have noticed these productions, which were certainly never designed to appear beyond the college walls, (for what have the public, or the profession at large, to do with the adulation, which the Fellows are, annually, in the habit of bestowing on each other?) had not the latter of the two, been made the vehicle of an illiberal attack on the principles and conduct of the licentiates. Dr. Bourne congratulates his fellow members, that they still continue to enjoy their *good things*, in spite of the hostile attack they have lately experienced: “*Scimus autem quam hostili animo, quam instructa acie, manus hominum infensa nuper in nos impetum fecerit. Quorum conatus quid aliud propositum habebant, nisi ut in hoc collegio perturbarentur et everterentur omnia? Non agebatur de contumacia reprimenda, non de muleta huic vel illi circulatori, audacter malas suas artes apud credulum vulgus*

* Vide preface to Brown's Elements, by Dr. Beddoes.

“*exercenti*

“ exercenti et venditanti, imponenda; hæ res, molestæ
 “ quamvis sint, levioris tamen sunt momenti: sed
 “ agebatur de *statu* et *dignitate* collegii, atque, ut ita
 “ dicam, de aris et focis nostris. Conjuravere enim
 “ multi, (five odio, five invidia, five, quod his tempo-
 “ ribus nimis grassatur, novarum rerum studio, five
 “ honestiore quavis causa permoti, non meum est
 “ dicere, sed qualicunque causa permoti conjura-
 “ vere) et quodcunque opes, quodcunque industria,
 “ quodcunque solertia potuit, id omne in hoc contu-
 “ lere, ut labefactaretur auctoritas vestra; ut mores
 “ institutaque longa annorum serie confirmata in de-
 “ fuetudinem abirent; ut academix nostræ privilegiis
 “ suis spoliarentur; ut denique nihil esset, quod non
 “ loco dimoveretur suo.”

The licentiates will probably smile at the ruin and
 devastation they were about to have committed, by
 their *combinations* and *conspiracies*: they will proba-
 bly, however, at the same time, look with just con-
 tempt and indignation, on the malevolence, which
 could ascribe their honourable exertions in the cause
 of reason and science, to such base motives. Let the
 fellows congratulate each other, if it please them, on
 the *legal* victory they have obtained; but let them
 not so far insult common understanding, as to talk of
 justice or public good.

GENERAL VIEW

OF THE

PROGRESS OF MEDICINE.

IF the progress of Medicine were to be estimated by the number of publications issuing from the press in a given period ; or even by the introduction of novel doctrines, and new methods of cure ; very favourable ideas might be entertained of the advances of our art, in the present times. As, however, this is not true of any art or science ; so of Medicine in particular, it is far from being a warrantable inference. Novelty and improvement are not necessarily synonymous. Many of the facts that are ushered into the world, lose their importance, when subjected to a rigid and impartial investigation : and we are compelled to acknowledge, that Medicine has made much less real progress, than its sanguine professors are willing to flatter themselves with.

The progress of Medicine towards perfection has always been slow ; and there are sufficient reasons to believe that it always will be so. The most striking discoveries in Natural Philosophy, even in the sciences most nearly related to Medicine, have thrown much less light on the healing art, than might, a priori, have been expected. They have, indeed, tended much more to introduce fanciful hypothesis, than to establish rational and successful practice. If we retrace the great discoveries, which time or chance have brought to

to light, in the different branches of Natural Philosophy, we shall find every one of them marked by the introduction of some novel speculation in the doctrines of Medicine. Thus gravitation, magnetism, chemistry, electricity, even anatomy and physiology, have all of them given rise to theories, as wild as they were novel, and which time has never failed to level with the dust.

When chemistry first began to investigate the hidden properties of bodies; acid and alkali, fermentation, ebullition, were employed to explain the phenomena of diseases, and their method of cure. When the circulation of the blood was detected, and the exceeding minuteness of the canals considered, we heard of nothing but lentor and viscosity, and their consequence, obstruction. When the irritability of the muscular fibre was examined, and its powers of contraction observed, spasm became the alledged source of the morbid changes which took place in the system. This condition, again, was considered as fanciful, and Debility succeeded. And lastly, when the elements, as they had been supposed, of water and air, became resolved into their constituent parts, health and disease were conceived to depend on the proportion of gasses, or their radicals, entering into the animal compound.

It is, perhaps, fortunate for mankind, that, amidst this war of opinions, the practice of Medicine has not always undergone a corresponding change. Physicians have submitted, in some degree, to be guided by experience, without trusting wholly to their own speculations; the methods of cure handed down to us from the earliest ages of Medicine, have continued, in a great measure, to guide the conduct of practitioners, at least of such as have withstood the seduction of hypothesis. The practice of the earlier ages, was, for the most part, founded on the sure basis of experience: the theories which were then employed, served rather to amuse the fancy, than to influence

the treatment of disease. Hence it is, that we have no surer guides than the earlier writers, nor any less likely to lead us into practical errors.

It is not, however, to be concluded, that the art of Medicine has made no advances since the days of Hippocrates, of Galen, or of Celsus ; or that all the perfection, of which it is capable, has been attained : —far otherwise. Many errors of those times have been exploded ; many important points in the animal œconomy illustrated ; and many valuable additions made to the *materia medica*. Yet the whole has been less, than might have been looked for, in a comparison with other arts, and considering the long period of time which has elapsed. We may learn from hence, what sanguine men often seem to have forgotten, or to have overlooked, that Medicine is one of the most difficult arts, and the least open to demonstrative evidence. The causes have been sufficiently pointed out in the aphorism of Hippocrates, “ *Vita brevis, ars longa, occasio celeris, experimentum periculosum, iudicium difficile.*”

But although we are not to measure the progress of medicine by the standard which has been mentioned, the number of publications marks, decidedly, an attention to the subject, which cannot fail to be productive of utility. The spirit of investigation is kept awake, curiosity is stimulated, and a wide diffusion of knowledge becomes the certain consequence. In this view of things, we may contemplate the present state of Medicine with considerable satisfaction.

Pneumatic Medicine, the subject which first attracts our notice, has made little progress since our last report. It seems indeed to have been nearly stationary. Whether it be, that public encouragement is wanting to bring the matter fairly to the test of experiment ; the efforts of individuals being found inadequate ; or whether a further experience has really lessened the confidence of practitioners in this mode of cure, we shall not take upon us to determine. That much
exaggeration

exaggeration has taken place on the subject, seems on all hands to be allowed; and the effect of this in destroying, even a just degree of confidence, has been too often proved.

The discovery of the effects of acids and other substances, supposed to act chemically, by imparting oxygen to the system, may be considered as the offspring of pneumatic medicine. The facts adduced on this head seem to favour the notion, that there are various medicines, which, by undergoing a decomposition in the digestive organs, become capable of altering the condition of the circulating mass, and ultimately of the solids themselves, and thus of removing certain changes supposed to be induced on them by disease.

If we were to confine our view to one side of the question, and contemplate only the facts and evidence brought in support of this opinion, we shall be led to conclude, that great progress has been made in the knowledge of causes, and in our means of obviating them. Seeing matters, however, in different lights, we find our confidence much reduced. Hitherto we have had occasion to state the evidence on one side only. We think it proper, however, to observe generally at present, that extensive trials in the metropolis, and which will soon come under our particular notice, lead to a very different conclusion. So far, therefore, there does not seem sufficient foundation for supporting the new theories, which threatened to overturn all preceding doctrines, and to reduce Medicine, as a science, to a state of certainty, measurable with almost mathematical precision.

Although, however, the general inferences from the facts adduced are untenable, and the facts themselves, perhaps, to be received with some degree of caution, (for how otherwise can we reconcile the jarring and contradictory statements of different writers?) we are, nevertheless, not to lose the benefit of them, as far as they go. With respect to the

use of acids in lues venerea, we apprehend there can be no doubt, that they are capable at times of arresting the progress of venereal action; and, in some instances, of ultimately removing them: but their power, in this way, does not seem to be so great, as to supersede the use of mercury; which will still, probably, continue the grand specific (if such a term may be used) in this malady. It is highly probable, that there are yet other substances which possess an influence over the disease in question. Our readers will doubtless recollect the high encomiums bestowed on opium, as an antisyphilitic, a few years ago; supported too, like the acids, on strong, and apparently unexceptionable evidence: yet we all know the fate it has since undergone.

It is undoubtedly a high recommendation of the new remedies, that they operate without deranging the general health, in any considerable degree; an inconvenience too often attending the use of mercury. Further, they seem to remedy the ill effects of mercurials, when exhibited in combination with them; and hence promise to become at least valuable auxiliaries. But we are still in want of facts to enable us to speak decidedly on the subject. Amidst the great and general attention it has excited, it will doubtless undergo a full and satisfactory investigation.

The Diseases of Seamen, a subject of great national importance, have been treated of with great judgment by Dr. Trotter in his *Medicina Nautica*. Sea voyages, formerly so destructive to mariners, are now accomplished with as little mortality, if not less, than is found to take place in any other situation of life. This is perhaps more to be attributed to æconomic regulations, than to medicine strictly; but it is to the enlightened views of medical men, chiefly, that these owe their suggestion and establishment.

The destructive fever, which has now raged for so many years in the western hemisphere, has called forth the talents of many able practitioners, in the investigation

vestigation of its nature and cure. We need only refer to the very valuable treatises of Rush, Clark, and M'Lean, on the subject. The wished-for success in combating it, has not yet been fully attained; but many important facts have been ascertained respecting it, that will, it is probable, ultimately lead to a more successful practice.

The influence of heat and cold on the living system has excited the attention of a very able physician. The subject is of great extent and importance, and affords much scope for diligent enquiry. It is really surprizing, that a thing so open to every day's observation, should have been so little and so fruitlessly investigated. It certainly leads to a knowledge of the most important phenomena of fever. It is to be hoped, therefore, that Dr. Currie will continue to bestow his attention on a matter so highly interesting.

Many important points of physiology will be found to have received considerable illustration during the past year. Mr. Home's Remarks on the action of the Muscles of the Eye; Dr. Haighton's and Mr. Cruickshank's Experiments on Animal Impregnation; Dr. Monro's Tracts on the Brain, Eye, and Ear; Dr. Wells's Remarks on the colouring matter of the Blood: these, with many others that might be mentioned, are sufficient evidence of the truth of our remark.

Mr. Kentish's method of treatment in burns, may be considered as an important innovation in practice. It is too much, perhaps, to say, that its superior utility has been indubitably established; yet enough has been adduced, to recommend it to the attention of other practitioners.—Were we to notice particularly every article in the present volume, which merits commendation, we should extend our observations to much too great a length. Suffice it to say, that ample proofs are afforded in it, of the advancing state of our art; the natural result of patient and diligent investigation in its professors.

We

We must not conclude this sketch without calling the attention of our readers to a subject, in its present state, far from agreeable: we allude to the contest subsisting between the Court of Assistants of the late Corporation of Surgeons, and the members at large. In our last mention of the subject, we flattered ourselves that matters were in a train of accommodation, that would tend to the satisfaction of all parties, and to the honour and advantage of the art of surgery. In these expectations, however, we have been disappointed.

The rejection of the bill brought into parliament in such an underhand manner; the previous annihilation of the Corporation, by the illegal acts of the Court of Assistants; and the improbability that another act should be obtained, by men who had so glaringly abused their trust; seemed to have inclined the Court of Assistants to terms of accommodation with the members at large; and they shewed some disposition to join in a petition for an act of incorporation, that might be suited to the general interests of all. A meeting took place; proposals were offered by the Body of Surgeons, which were received in a manner that gave hopes the differences between them might admit of adjustment. The argument, however, which seemed to make the greatest impression was an indirect proposal of continuing the present Court of Assistants individually in their situations for life, under the new establishment. This point, which the members were willing to concede, for the purposes of harmony, and to accommodate the personal views of the Court, many of whom, perhaps justly, feared to stand the test of general suffrage, appeared to have due weight.

Unexpectedly, however, it was suggested to them, that although they had failed in their application to parliament, a revival of the old charter might be effected by the power of the Crown, which would continue matters, for the most part, on their former footing.

ing. Accommodation was now spurned at, and the proposals of the committee rejected.—Such is the present situation of things. It remains to be seen, whether or no a royal charter can be procured, to re-animate the rotten carcase of a rotten body, on a footing which the legislature has thought proper to reject.

The motives which led the court of assistants, in the first instance, to petition for a new act of incorporation, must not be forgotten. It was not the honour of the Art over which they presided, that they sought; it was not a desire to improve and extend the science of Surgery, by honorary rewards to rising merit, the establishment of lectures, or the publication of transactions, to record the industry and talents of individuals, and thus to excite emulation. These objects they had amply in their power, under the former constitution. But how grossly they neglected them, it is superfluous to say. Their motive was, a renewal of privileges and of powers, which, by their own mal-administration, they had lost: privileges, which they had shewn themselves as incapable of retaining, as they had been of employing to any one useful purpose.

With such glaring facts in view, it is curious to find these *guardians of the science of Surgery*, attributing the great advances which the art has made to the establishment of the corporation. The improvements which have taken place in this branch of the healing art, are owing solely to the exertion of individuals; exertions which an improving state of society would naturally have given birth to, independent of collegiate establishments; which more frequently operate in repressing emulation, than in exciting it; in withholding, than in bestowing, the reward of rising merit. Of many of the individuals composing the late court of assistants, it is impossible to speak in terms of too high respect. But their conduct as a corporate body, has been truly contemptible.

If

If ever the Corporation is established on a liberal and enlightened plan, we may hope to see it promoting science, fostering merit, repressing empiricism, and thus, by consulting public utility, fulfilling the contract, which is virtually made by every exclusive establishment; between the country which gives, and the company which receives, the charter. The ancient administration, to use the words of an eloquent writer, was a bad one; which, like that in Warwick Lane, poisoned the Corporation into torpor and uselessness. Without a liberal plan of internal management, which admits no distinction of members, but such as superior merit in knowledge and abilities points out, nothing will be achieved: a few crafty men will usurp the whole government, whose interest will consist in preventing general meetings, lest the lamp of emulation should be lighted, and lest, while the new college shone forth with all the splendor of science, their own little glory should be eclipsed and lost.

CATALOGUE OF BOOKS,

In the different Branches of Medicine and Surgery,
Published in the year 1797.

- 1 Descriptive Account of a new method of treating old ulcers of the legs. by *Thomas Baynton*, Surgeon of Bristol. 8vo. 2s 6d Robinfons.
- 2 Aids to Nature; containing a plain and easy method of establishing and preserving health in children. by *Captain Reynolds*, 1s Egerton.
- 3 Mercury stark naked, a series of Letters addressed to Dr. Beddoes. by *Isaac Swainson*, 2s Ridgeway.
- 4 An Attempt to ascertain the nature and cause of the pulse in a state of health, as far as it depends upon the contractile power of the heart and arteries, and the mechanical effect of the blood by distention. by *J. Rumball*. 1s 6d Johnson.
- 5 A Treatise on the yellow fever, as it appeared in the Island of Dominica, in the years 1793, 4, 5, and 6, by *James Clarke*, M. D. 8vo. 7s Murray.
- 6 A Medical Glossary, in which the words in the various branches of Medicine are deduced from their original languages; properly accented and explained. by *W. Turton*, M. D. 4to. 1l 10s Johnson.
- 7 Annals of Medicine for the year 1796, exhibiting a concise view of the latest and most important discoveries in Medicine and Medical Philosophy, by *A. Duncans*, senr. and junr. M. D. D. 8vo. 7s Robinfons.
- 8 An Essay on Burns, principally those which happen to workmen in mines, from the explosion of inflammable air or hydrogen gas. by *E. Kentish*, 8vo. 3s 6d Robinfons.

9 Critical

- 9 Critical Examination of Lavoisier's Elements of Chemistry. 1s Wright.
- 10 Surgical and Physiological Essays. Part 3d, by *J. Abernethy*, 8vo. 3s 6d Cadell.
- 11 The Pupil of Nature, by *Mrs. Mears*, 3s 6d Faulder.
- 12 An Introductory Lecture to a Course of Chemistry, by *R. Bourne*, M. D. 2s Rivingtons.
- 13 Medical Reports on the effects of water, cold and warm, as a remedy in fever and febrile diseases: with observations on the nature of fevers, and on the effects of opium, alkohol, and inanition, by *James Currie*, M. D. 8vo. 6s Cadell.
- 14 A Dissertation on the Chemical and Medical properties of the Bristol hot well water: to which are added practical observations on the prevention and treatment of Pulmonary Consumption, by *A. Carrick*, M. D. 2s 6d Cadell.
- 15 Observations in Defence of a Bill lately brought into Parliament, for erecting the corporation of Surgeons into a College, by *Thomas Chevalier*. 2s 6d Johnson.
- 16 An Illustration of the Analogy between Vegetable and Animal Parturition, by *A. Hunter*, M. D. 1s Cadell.
- 17 Essays, Physiological and Philosophical, on the distortion of the Spine, on the motive power of animals, on the fallacy of the senses, and on the properties of matter, by *C. H. Wilkinson*. 4s Law.
- 18 The Medical Diary for the year 1798, containing ruled pages for an account of each day's business, a correct list of the London, Edinburgh, and Dublin Royal Colleges of Physic, public Hospitals, Lying-in Charities, &c. 1s 6d Boosey.
- 19 Practical Observations on the Disease of the Joints, commonly called White Swelling, with some remarks on scrophulous Abscesses, by *Bryan Crowther*. 3s Robinsons.

- 20 *Enchiridion Syphiliticon*, or directions for the domestic treatment of venereal complaints, by *A. P. Buchan*, M. D. 2s 6d Callow.
- 21 *Medicinische Beobachtungen und Erfahrungen ans den Sud Preussischen, Konigl, Feldlazarethen.* i. e. Medical Observations and Experiments from the Royal South Prussian Field Hospitals, by Dr. *F. W. Voss*, Physician to the Army-Hospitals.
- 22 *The Hygrology, or Chemico-physiological Doctrine of the Fluids of the Human Body:* translated from the Latin of *J. J. Plenck*, of Vienna, by *R. Hooper*, M. D. 8vo. 5s Boosey.
- 23 *Medical Inquiries and Observations*, by *Benjamin Rush*, M. D. of Philadelphia, vol. 4, 8vo. 6s Dilly.
- 24 *Medical, Philosophical, and Vulgar Errors*, of various kinds, considered and exposed, by *John Jones*, M. B. 8vo. 6s Cadell and Davies.
- 25 *Elements of the Veterinary Art*, by *Charles Vial de St. Bell*, 4to. Price 1l 1s Boosey.
- 26 *Observations on the structure and œconomy of Plants*, by *R. Hooper*, M. D. 8vo. 4s Rivingtons.
- 27 *An Account of two cases of the Diabetes Mellitus;* with general remarks, by *John Rollo*, M. D. also, the results of the Trials of various acids, &c. in the treatment of Lues Venerea, by *William Cruickshank*, Surgeon, 2 vol. 8vo. 10s Dilly.
- 28 *The Life of M. Zimmerman;* translated from the French of *M. Tissot*, 12mo. 2s 6d Vernor and Hood.
- 29 *An Essay, concerning the outward and salutary Application of Oils on the Human Body*, by the Revd. *William Martin Trinder*, M. D. 8vo. 1s Longman.
- 30 *A Practical Synopsis of the Materia Alimentaria, and Materia Medica*, by the author of *Thesaurus Medicaminum*, vol. 1, 8vo. 5s Baldwin.
- 31 *Observations sur la Nature et sur le Traitement du Rachitisme*, par *M. Portal*, 8vo. Paris.

- 32 An Inquiry into the Nature and Causes of the Fever at St. Domingo, by *Hector M'Lean*, M. D. 8vo. 6s Cadell and Davies.
- 33 Outlines of a Course of Lectures on Chemistry, by *T. Garnett*, M. D. 8vo. 4s Cadell and Davies.
- 34 Medical Facts and Observations, vol. 7th. 8vo. 6s Johnson.
- 35 Die Kunst das menschliche Leben zu Verlangern; i. e. the Art of prolonging Human Life, by *G. W. Hufeland*, 8vo. 9s Jena.
- 37 De Corporis Humani Fabrica, by *S. T. Soemmering*, vol. 3, 8vo. 6s. Imported by Boosey.
- 38 Medical Extracts, vol. 4, 8vo. 7s Johnson.
- 39 A Short Address to the Professors of Surgery, 8vo. 1s Sewel.
- 40 Practical Observations on the Treatment of Ulcers on the Legs, by *Everard Home*, Surgeon of St. George's Hospital, 8vo. 4s 6d Nicol.
- 41 Three Treatises, on the Brain, the Eye, and the Ear, illustrated by Tables, by *Alexander Monro*, M. D. 4to. 1l 5s Robinsons.
- 42 The Anatomy of the Human Body, vols. 1 and 2, comprising the Bones, Muscles, Joints, Heart, and Arteries, with plates, by *John Bell*, Surgeon in Edinburgh, 1l 2s Cadell and Davies.
- 43 Reports principally concerning the Effects of the Nitrous Acid in the Venereal Disease, by the Surgeons of the Royal Hospital at Plymouth, and by other Practitioners, 8vo. 2s 6d Johnson.
- 44 Tractatio Anatomico-Physiologica de Nervis Humani Corporis aliquibus: Auctore *C. S. Andersch*, vol. 1, with 2 plates, Regiomontani. Imported by Boosey.
- 45 Pædotrophia: or the Art of Nursing Children, a Poem. Translated from the Latin of Scevole de St. Marthe, by *H. W. Tytler*, M. D. 8vo. 7s Debreëtt.
- 46 A few Remarks on the Nature and Cure of Colds, by *T. M. Kelson*, 8vo. 1s 6d Murray.
- 47 Philosophical

- 47 Philosophical Transactions of the Royal Society of London, for the year 1797, parts 1 & 2 Elmsley.
- 48 A Practical Inquiry on Disordered Respiration, distinguishing convulsive Asthma, by *Robert Bree*, M. D. 8vo. 6s Robinsons.
- 49 De Morborum Primarum Viarum vera Notitia et Curatione, auctore *D. G. C. T. Wedekind*, M. D. Norimbergæ, 4to.
- 50 Historia Systematis Salivalis Physiologicæ et Pathologicæ considerati, auc. *J. B. Siebold*, M. D. Jenæ.
- 51 The Anatomist's Vade Mecum, containing a concise and accurate description of the Human Body, by *R. Hooper*, M. D. 12mo. 3s Boosey.
- 52 A Collection of Engravings, designed to facilitate the Study of Midwifery, by *J. Hamilton*, jun. M. D. 4to. Edinb.
- 53 Remarks on the Scurvy, by *T. Crossfield*, 8vo.
- 54 A Lecture on the Preservation of Health, by *T. Garnett*, M. D. 8vo.
- 55 A Description of the Genus Cinchona, illustrated by Figures of all the Species hitherto discovered; also, a Description, with Figures, of a new Genus, named Hyænanche, or Hyæna-poison, by *Aylmer Bourke Lambert*, Vice President of the Linnæan Society, 4to.
- 56 Journal für die Chirurgie, &c. i. e. Journal for Surgery, Midwifery, and Forensic Medicine, by *J. C. Loder*, Jena.
- 57 Extrait du second volume, du Traité complet sur les Maladies Syphilitiques, relatif à l'action du Mercure, et plusieurs nouveaux remèdes sur l'économie animale, par *J. Swediaur*, M. D. 8vo. Paris.
- 58 Programma del modo d'agire sul Corpo Umano, per mezzo de Fritzioni, &c. on the Effects produced on the Human Body, by means of Frictions with Saliva and various other substances that are usually administered internally, by *V. L. Brera*, Pavia.

- 59 Plenck Icones Plantarum Medicinalium, 23 Fasc. Tab. xiv. color. fol. 541 Remnant.
- 60 A Dissertation on Artificial Teeth, by *M. D. de Chamont*, 2s 6d Dulau.
- 61 Observations on apparent Death from Drowning, Suffocation, &c. with the means to be employed for recovery, by *James Curry*, M. D. 2s 6d Johnson.
- 62 An Appeal to the Gentlemen studying Medicine at the University of Edinburgh, by *S. F. Constantio*, M. D. 6d Mudie.
- 63 A Treatise on Chirurgical Diseases, translated from the French of Chopart and Default, by *W. Turnbull*, vol. 1. 9s. boards, Richardson.
- 64 De Febribus Periodum habentibus Observationes, Novæ, edit. *Franciscus Schraud*, M. P. Pest. 12mo. 2s Boosey.
- 65 Opuscula Physico-Chemica et Medica antehac scorsim edita; nunc post obitum collecta, auctore *J. G. Leidenfrost*, M. D. & Prof. 2 vol. 7s Boosey.
- 66 Observationes Medicinales, circa res gestas in Clinico Instituto Nosocomii Vindobonensis, 1796, auc. *J. S. Frank*, M. D. 12mo. 3s Boosey.

INDEX

TO THE

FOURTH VOLUME.

A CUTE Diseases, Observations on	250
Angustura Bark, Observations on	259
Abernethy, Mr. Account of uncommon Formation of the Viscera	268
———Surgical and Physiological Essays	67
Account of Two Cases of Diabetes	178
Animal Food, striking Effects of in Diabetes	188
Acids, Effects of in Lues Venerea	207
Air-bladder of Sword-fish contains Oxygene	112
Aneurism, Two Cases of	79
Appendix to a Treatise on the Stone	88
Angina Pectoris, Dissertation on	47
Ague, Remarks on	11
Amputation at the Shoulder, Two Cases of	19
Annals of Medicine, Vol. I.	24
Asthma Periodic, Remarks on	27
Angina Polyposa, Remarks on	27
Amylaceous Matter afforded by different Vegetables	320
Arrow Root, Account of	320
Arum Esculentum	320
Animal Impregnation, Experiments on	321
Absorption of Solids, Proofs of	357
Anatomy, Treatise on	366
Arteries, Anatomy of	372
Anderesch, C. S. de Nervis Tract.	395
Affusion of Cold Water in Fever	402
Ammonia Sulphurata, Remarks on	422
Astragalus Exscapus, Remarks on	424
Air, Fatal when Injected into the Veins	458
Application of Belladonna to the Eyes	459
Animal Heat, Observations on	501
Alcohol, Operation of in Fever	505
Absorption by the Skin questioned	506
Asthma, Dissertation on	530
Anatomists Vade-Mecum	563

B

Blizard, Mr. Suggestion for the Improvement of Hospitals	199
Brain, comparative Size of in different Animals	202
Borthwick, Dr. G. Account of a fatal Case from swallowing a Plumb-stone	109
Ball, Mr. Letter on the Preparation of Opium	114
Blood-letting, Effects of in the Fever of Philadelphia	145
Brain, Remarks on Injuries of	67

INDEX.

Brandis, Dr. on Lukewarm Bath in Fever	34
Bismuth, Remarks on	35
Blood-letting. Utility of in certain Species of Dropsy	43
Burd, Mr. Case of Amputation at the Shoulder	19
Bronchocele, Remarks on	26
Bilious Remittent Fever, Observations on	279
Bibliotheca Medica	294
Burrowes, Dr. G. Case of enlarged Spleen	303
Burns, Effects of Electricity on	312
Bourne, Dr. R. Introductory Letter on Chemistry	337
Brain, Eye, and Ear, Three Treatises on	354
Bell, Mr. J. Treatise on Anatomy	366
Beddoe's Reports on Nitrous Acid	384
Bacheracht, Dr. Dissertation Hygienique	396
Burns, Essay on	432
Bristol Water, Dissertation on	445
Bredin, M. on the Poisonous Property of the Yew Tree	453
Belladonna, Juice of applied to the Eye	459
Blood-letting, Use of in Yellow Fever	476
Blisters, Caution respecting in Warm Climates	476
Blood, Experiments on the Colour of	516
Bree, Dr. R. Inquiry on Disordered Respiration	530
Blair, Mr. W. The Soldier's Friend	567
Brunonian Doctrine, Examination of	573
Biliary Obstructions removed by Salivation	101

C

Croonian Lecture, by Mr. Home	227
Cornea, Observations on	241
Corns, Remarks on the Nature of	253
Carlisle, Mr. A. on Corns	225
Castration, Case of performed by the Patient	261
Charcoal, on the External Application of	261
Carbonic Acid Gas, use of in Ulcers	261
Clarke, Dr. J. Extraordinary Production of Generation	269
Cruikshanks, Mr. on the Nature of Sugar	189
—————on the Effects of Acids in Lues Venerea	207
Citric Acid, Effect of in Lues Venerea	211
Constipation, Case of cured by Calomel	103
Cynanche, Case of	104
Crichton, Dr. A. Account of a Case of Cynanche	104
Concussion of the Brain, Remarks on	70
Carbonic Acid Gas, Effects of in Consumption	31
Consumption, Cure of by Fixed Air	31
Cinchona, Remarks on the use of in Fever	59
Contagion, Remarks on	2
—————favoured by Cold	2
Croup, Remarks on	27

INDEX.

Page,

Clark, Dr. J. Treatise on Yellow Fever,	_____	279
Collection of Engravings on Midwifery,	_____	293
Corporation of Surgeons, Abuses of	_____	295
Cayenne Pepper, Use of as a Counterpoison	_____	343
Clark, Dr. J. Remarks on Jatropha	_____	343
Cassada Bitter, Remarks on	_____	343
Cruikshank, Mr. Experiments on Animal Impregnation,	_____	332
Chemistry, Introductory Lecture to	_____	337
Colds, Remarks on the Nature and Cure of	_____	400
Curry, Dr. James, on Water as a Remedy in Fever	_____	401
Cold Water, Use of in Fever,	_____	402
Colchicum Autumnale, Remarks on	_____	423
Carrick, Dr. A. on Bristol Water,	_____	445
Consumption Pulmonary, Observations on	_____	447
Cataract, Remarks on	_____	459
Cold Water, Use of in Yellow Fever,	_____	470
Concretions, Gouty and Urinary, Experiments on	_____	483
Calculus, Observations on	_____	486
Colour of Blood, Experiments on	_____	516
Children, Treatise on the Disorders of	_____	562

D

Double Vision, Observations on	_____	232
Dysentery, Remarks on	_____	29, 13, 253
Die Kunst das Menschlichen, &c.	_____	274
Diabetes, History of 2 Cases of	_____	178
Dropfy, Remarks on the Plethoric	_____	40
Dissertatio Medica de Angina Pectoris,	_____	47
Duncan, Drs. Annals of Medicine, v. 1,	_____	24
De la Fontaine's Treatises respecting Poland,	_____	24
Diabetes, Case of	_____	109
De Corporis Humani Fabrica,	_____	276
Dexter, Dr. A. Case of Locked Jaw,	_____	305
Dioscorea, Remarks on	_____	320
Dissertatio Hygienique,	_____	396
_____ de Defoliatione Plantarum,	_____	425
Defoliation of Plants, Observations on	_____	425
Dissertation on the Bristol Hot-Wells,	_____	445
Disordered Respiration, Treatise on	_____	530
De Morbis Primarum Viarum,	_____	549

E

Extrait, sur la Medecine Morale,	_____	564
Essay on the Abuse of Spirituous Liquors,	_____	399
_____ on the External Use of Oils,	_____	416
_____ on Burns,	_____	432
Engravings, Collection of, on Midwifery	_____	293
Emphysema, Uncommon Case of	_____	304

INDEX.

	Page.
Electricity, Effects of in Burns,	312
Eye, Observations on	362
Epidemic Fever of Jamaica, Case of	104
Embalming, Remarks on	114
Errors in Medicine, Treatise on	133
Emphysema, Remarks on	80
Earle, Mr. J. Appendix to his Treatise on the Stone,	88
Elements of the Veterinary Art,	166

F

Fothergill, Dr. A. on the Abuse of Spirituous Liquors,	399
Fever, Review of	410
—— of St. Domingo, Account of	460
—— Theory of	476
—— Proximate Cause of	147
Fracture of the Skull, Remarks on	67
Fungus of the Brain, Remarks on	70
Fracture of the Ribs, Observations on	80
Fevers, Remarks on	168, 34, 86
Fischer, Dr. Observations on British Practice,	34
Fever, Treatise on	58
—— Cases of	64
Fumigation, Remarks on	7
Febrifuge, such a Remedy doubted,	10

G

Golding, Mr. Account of an Affection of the Testes,	260
Generation, Extraordinary Production of	269
Gregory, Dr. G. Economy of Nature	192
Girtanner, Dr. Remarks on Consumption,	29
Gasses, Effects of in Consumption	29
Grapengreisser, Dr. Observations on Plethoric Dropsy	40
Gratiola, Effects of in Madnes,	29
Gibbons, Dr. T. Effects on Salivation in Biliary Obstructions	101
Gall Stones, Cases of	101
Graves, Dr. R. Case of Poisonous Effect from the Hemlock Drop- wort,	321
Gouty and Urinary Concretions, Paper on	483
Garnett's Dr. T. Outlines of a Course of Chemistry,	497
Gilbert, M. Memoire on Moral Medicine,	564
Gastric Juice, Effects of on the Skin	566

H

Home, Mr. E. on Muscular Motion,	227
—— Treatise on Ulcers of the Legs,	341
Hufeland's Art of Prolonging Life	274
Hooper, Dr. R. Economy of Plants,	167

INDEX.

	Page,
Hooper, Dr. R. Translation of Plenck's Hygrology, —	91
————— Anatomist's Vade Mecum, ———	563
Hospitals, Suggestion for the Improvement of ———	199
Hamilton, Dr. J. Junr. Engravings on Midwifery, ———	293
Holyoke, Dr. E. A. Observations on the Temperature of America, ———	303
————— Account of Uncommon Case of Emphysema, ———	304
Hydrocephalus, Case of ———	313
Hemlock Dropwort, Poisonous Effects of ———	321
Haighton, Dr. J. Experiments on Animal Impregnation ———	321
Hydrocephalus, Observations on ———	355
Hammick, Mr. Account of the Effects of Nitrous Acid in L. V. ———	384
Hydrocele, Case of ———	103
Hofack, Dr. D. Case of Hydrocele, ———	103
Hernia Cerebri, Remarks on ———	70
Hygrology of Plenck, Translation of ———	91
Healing Art in England, Remarks on ———	34
Hydrops Phlethoricus, Observations on ———	40
History of Medicine, ———	53
Health, State of in the Fleet, ———	2
Heat, the most powerful Corrector of Contagion, ———	7
Hufeland, M. Account of the Effects of Nux Vomica in Dysentery, ———	29

I

Intermittents, Remarks on the Origin of ———	253
Irritability of Plants, Remarks on ———	172
Inhalation by the Skin questioned, ———	506
Iron, not the Cause of the Red Colour of Blood ———	525
Insufflation dans les Veines ———	458
Injection into Veins, Effects of ———	458
Inquiry into the Mortality of St. Domingo, ———	460
Irritability, Remarks on ———	217
Iatropa, Remarks on ———	320
Impregnation, Experiments on ———	321
Introductory Lecture to Chemistry, ———	337
Jones, Mr. Philosophical and Vulgar Errors Exposed, ———	130
Inflammation of the Pia Mater, Remarks on ———	71
Irritability, Experiments on ———	76
Inquiry into the Origin of Lues Venerea, ———	87
Injuries of the Brain, Remarks on ———	67

K

Key Instrument, Improvement of ———	265
Kelson's Remarks on Colds, ———	400
Kali Sulphuratum, Remarks on ———	421
Kentish, Mr. E. Essay on Burns, ———	432
Kuhnii Bibliotheca Medica, ———	294
King, Mr. Improvement of the Trepine, ———	302

INDEX.

L

Page,

Life of Zimmerman,	194
Lemon Juice, Effects of in Lues Venerea,	211
Life, Nature and Properties of	571
Letter on the Claims of Medical Practitioners,	453
Locked Jaw, Remarks on	289
————— Case of	305
Lumbar Abscess, Remarks on	72
Lues Venerea, Inquiry into the Origin of	87
Lithotomy, Remarks on	88
Lukewarm Bath, Use of in Fever,	34
Lapis Suillus, Use of in Lithiasis,	44
Liljeblad, Dr. Remarks on do.	44
Lithiasis, Remedy for	44
Lentin, M. on the Use of Gratiola in Madness,	29
Lues Venerea, Cure of by Acids, &c.	207

M

Muscles, Straight, of the Eye, Diseases of	227
Medical Facts and Observations, vol. vii.	250
Morbid Poison, Account of	223
Medecine Operatoire, De la	495
Medecine Morale, Memoire sur;	564
Mouth, Diseases of	549
Mind, Influence of, on the Body,	565
Medical Reports on Warm and Cold Water,	401
Materia Medica, Synopsis of	419
————— Alimentaria,	419
M'Lean, Dr. H. Account of the Fever in St. Domingo,	460
Muscle, Chemical Analysis of	276
Mineral Waters of Dominica, Account of	291
Medical Extracts, vol. 4,	292
Monro, Dr. A. Three Treatises on the Brain, Eye, and Ear,	354
Mercury, Use of in Fever of Jamaica,	104
Maclarty, Dr. on do.	104
Medical, Philosophical, and Vulgar Errors,	130
Medicinische Beobachtungen, &c.	85
Medical Enquiries and Observations, vol. 4,	92
Medicina Nautica, by Dr. Trotter,	1

N

Nitrous Acid, Effects of in Lues Venerea,	208
New System of Physiology,	568
Nitrous Acid, Effects of	389, 384
Nervous Fever, Observations on	34
Nux Vomica, Effects of in Dysentery,	29

INDEX.

O

Page,

Opacity of the Cornea, Arabian Mode of treating	248
Observations on the Structure and Oeconomy of Plants,	167
Oxygenated Muriate of Pot ash, Effects of in Lues Venerea	213
Oxygenated Muriatic Acid, Effects of in Lues Venerea,	210
Oxygenated Muriatic Gas, Method of Preparing	227
Oeconomy of Nature, by Dr. Gregory,	192
Outlines of a Course of Chemistry,	497
Opium, Operation of in Fever,	503
— produces its Effects when mixed with the Gastric Juice, and rubbed on the Skin,	566
Oxygenous Philosophers, Doctrine of, refuted,	572
Oratio Harveiana, a Gul. Saunders, 1796,	582
— a Rob. Bourne, 1797,	582
Oil, Essay on the external Use of	416
Observations sur le Rachitisme,	456
Oenanthe Crocata, Poisonous Effects of	321
Opium English, Mode of Preparing	114
Oxygen, Effects of on Irritability,	76
— not essential to Vitality,	78
Opium, Efficacy of in Agues,	11

P

Pins extracted from the Breast, extraordinary Case of	263
Plants, on the Structure and Oeconomy of	167
Philosophical Transactions, parts 1 and 2 for 1797	227
Practical Inquiry on Disordered Respiration,	530
Parotid Gland, on the extirpation of	557
Physiology, New System of	568
Pædotrophia of Scevole de St. Marthe,	398
Practical Synopsis of the Materia Medica,	419
Plants, on the Defoliation of	425
Pulmonary Consumption, Observations on	447
Portal, M. on Rickets,	456
Practical Observations on Ulcers of the Legs,	341
Plumbstone, Fatal Effects from Swallowing,	109
Pneumatic Medicine, Observations on	112
Pearson, Dr. R. on the Vapour of Æther in Consumption,	113, 266
Pressure on the Brain, Observations on	67
Popliteal Aneurism, Cases of	79
Plenck's Hygrologia, Translation of	91
Practical Treatise on Fever,	58
Parker, Mr. Treatise on Fever,	58
Plica Polonica, Remarks on	25

R

Reil, Dr. Memorabilia Clinica,	35
Rowley, Dr. Scholæ Medicinæ Universalis Nova,	51

INDEX.

Rollo, Dr. J. History of 2 cases of Diabetes,	—	Page, 178
— Account of a peculiar Morbid Poison,	—	223
Respiration, Treatise on Disordered	—	530
Red Particles, not changed by Air or Neutral Salts,	—	517
— Colour of Blood, how heightened,	—	518
Remarks on the Nature and Cure of Colds,	—	400
Robelliard, M. on Malconformation of Urinary Passages,	—	455
Rickets, Observations on	—	456
Remittent Fever, Observations on	—	469
Respiration, Remarks on	—	378
Reports concerning Nitrous Acid, &c. in L. V.	—	384
Ruyfch, his method of Embalming,	—	126
Rush, Dr. B. Medical Inquiries, vol. 4.	—	91

S

Schmidt, Dr. de Angina Pectoris,	—	47
Schola Medicinæ Universalis Nova	—	51
Surgical and Physiological Essays, p. 3,	—	67
Scurvy, certain Cure of, by Vegetable Acids,	—	15
Surgical and Medical Tracts respecting Poland,	—	24
Squinting, Remarks on	—	236
Simmons, Mr. W. on the application of Charcoal to Ulcers,	—	261
Soemmering, Dr. de Corporis Humani Fabrica	—	276
St. Bell, M. Vial, Elements of Veterinary Art,	—	166
Sleep of Plants, Remarks on	—	176
Sugar, Remarks on the Nature of	—	189
Suggestions for the Improvement of Hospitals,	—	199
Sabatier, M. de la Medecine Operatoire,	—	495
Siebold, M. Historia Systematis Salivalis,	—	557
Submaxillary Gland, on the Extirpation of	—	560
Soldier's Friend,	—	567
Saumarez, Mr. R. New System of Physiology,	—	568
Seamen, Observations on the Health of	—	396
St. Marthe, Scevole, Pædotrophia,	—	398
Spirituuous Liquors, on the Abuse of	—	399
Stimulants, Efficacy of in Burns,	—	435
Suite d'Experiences sur l'If,	—	453
St. Domingo, Account of the Fever of	—	460
Short Address to the Professors of Surgery,	—	295
Spleen, enlarged, Case of	—	303
Stone in the Kidneys, Case of	—	313
Sensibility, Remarks on	—	367
Salivation, Effects of in Biliary Obstructions	—	101
Shee, Dr. Case of Diabetes,	—	109
Salivation, Utility of in Yellow Fever,	—	145
Spina Bifida, Case of	—	75
Succus Nervosus, Seat of Fever,	—	86
Staff for Lithotomy, Improvement of	—	88

INDEX.

Page,

T

Trotter, Dr. T. Medicina Nautica,	I
Typhus, Remarks on	250, 8
Tourniquet, Effect of in Stopping Ague,	12
Trichoma, Remarks on	25
Testes Uncommon Affection of	260
Tissot, M. Life of Zimmerman	194
Treatise on the Disorders of Childhood,	562
Tractatio de Nervis,	395
Tytler, Dr. H. W. Translation of Pædotrophia,	398
Typhus, Account of	403
Trinder, Revd. W. M. on the External Use of Oils,	416
Treatise on the Yellow Fever,	279
Tetanus, Remarks on	289
Trismus Nascentium, Remarks on	289
Thornton, Dr. J. Medical Extracts, v. 4,	292
Trephine, Improvement of	67, 302
Temperature of America, Remarks on	303
Three Treatises ; on the Brain, Eye, and Ear,	354
Todd, Mr. on the Epidemic Fever of Jamaica,	104
Toon-Tree, Remarks on, in Fever,	111
Turnbull, Mr. W. on the Origin of Lues Venerea,	87

U

Vegetable Acid, Effects of in Scurvy,	15
Viscera, Uncommon Formation of	268
Venereal Disease, Cure of by Acids, &c.	207
Underwood, Dr. M. on Disorders of Childhood,	562
Vrolick, Dr. on the Defoliation of Plants,	425
Urinary Passages, Malconformation of	455
Veins, Injection of	458
Urinary Concretions, Experiments on	486
Vinall, Mr. J. on the Effects of Electricity on Burns,	312
Ulcers of the Legs, Treatise on	341
Vitriolic Æther, Use of the Vapour of, in Consumptions,	113, 266
Voss, Dr. on Field Hospitals,	85

W

Wine, Observations on in Fevers,	10, 60
Wichman, D. Remarks on Croup,	27
Wright, Dr. W. on Acute Diseases,	250
Winterbottom, Dr. T. M. on Augustura Bark,	259
Wells, Dr. Remarks on the Colour of the Blood,	516
Wedekind, Dr. de Morbis Primarum Viarum,	549
Water, Cold and Warm, Remedy in Fever,	401
Wollaston, Dr. W. U. on Gouty and Urinary Concretions,	483
Withering, Dr. Observations, on Pneumatic Medicine,	112

INDEX.

Page,

Y

Yew Tree, Remarks on the Poisonous Effects of	453
Yellow Fever, Treatise on	92, 279
Veterinary Art, Elements of	166

Z

Zimmerman, M. Life of	194
Zinc, Observations on	35



Handwritten notes or signatures in the bottom right corner, including what appears to be 'p. 2' and 'h. 2'.

